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CLAUSTHAL MINING SCHOOL NOTES—No. LIV.*

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,

Certificated Mining Engineer.

(Formerly Student at the Royal Bergakademie, Clausthal).

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SECTION III.

In order to keep the cutting tool in contact with the end of the bore hole the following arrangement is devised for a gradual automatic feed, or pushing forward of the cylinder. A double threaded screw, with a keyway on it, extends the whole length of the machine. On the cylinder two strong lugs are cast, and between these a nut is placed, which is prevented from rotating by means of a flat side, which bears against the outside of the cylinder; through this nut and these two lugs, which are bored out to suit the screw, the long screw passes. At the back end of the machine a sleeve, with a ratchet face, is passed over the screw, and which can slide along the screw, but which cannot in consequence of the key rotate except with the screw. Fitting into the ratchet face of this sleeve is the ratchet face of a second sleeve, the arm of which is attached to one of the tappets on the valve spindle, so that this second sleeve receives a reciprocating or rocking motion, its ratchet teeth in one direction slipping over the inclined portion of the ratchet teeth of the first sleeve, and in the opposite direction the vertical faces of the ratchet teeth engaging in each other causes a rotation of the first sleeve (which is fitted with a key), and consequently of the long screw, which as the nut through which it passes cannot rotate causes the forward motion of the cylinder. By properly adjusting the length of the arm of the sleeve, and that of the tappet, and the position of the latter, it may be so arranged that the sleeve which has the arm attached to it shall oscillate far enough for the teeth on the second sleeve to move so far back as to drop in and engage with the vertical faces of the teeth on the first sleeve only when the piston has made a complete stroke. In this manner the amount of feed can be regulated automatically to suit the varying nature of the rock passed through. The sleeve, which is fitted with a keyway, is kept pressed against the first by means of a spiral spring. The end of the long screw has a square portion filed upon it, so that a handle can be fitted on and the borer withdrawn more quickly from the bore hole. This machine, with the frame as arranged for quarrying or sinking purposes, weighs about 150 lb., and with a pressure of 5 atmospheres will drill a 2½-in. hole in granite 1 ft. deep in a minute; from 6 in. to 8 in., however, may be taken as the average. The machine works at the rate of from 500 to 800 blows per minute.

For drill work the following arrangement for mounting the drill is used:—The frame of the carriage consists of two castings, connected together by means of side bars. On each side of each casting a short axle is bolted, on which the four wheels (on which the carriage runs) are fitted. On each corner of the back casting a couple of standards are fitted, having a screw arrangement at the top for tightening them up against the roof. Between these standards a cogwheel is firmly bolted or cast on the casting, above and passing through the wheel as a bearing is a loose pin, which forms a large nut at the end. The piece forming the nut carries a small bracket, through which a small spindle passes carrying a small cog-wheel and a worm-wheel, the former gearing into the larger fixed cog-wheel and the latter into the long screwed horizontal bar. Through this nut a long horizontal bar, which is screwed for the back half of its length, passes; the front smooth end passes through a bracket, which can slide on a long curved (about the pin forming the nut) plate. To this bracket is bolted a smaller one, carrying a small endless screw, the axle of which having a square flat piece filed upon it can be rotated by the means of a handle. A large worm wheel is mounted on the long horizontal bar, and is fastened to it by a key fitted into a long groove in the horizontal bar, which allows the latter to slide through the wheel, but prevents its turning independently. On the end of the long bar a socket is coterred, and through this socket a very strong standard can slide, or be firmly fixed by means of a set of screws. This standard carries a face plate, to which a corresponding portion of the casting forming the drill frame can be bolted. By means of a screw arrangement this standard can be strutted against the floor, roof, or sides of the level. On rotating the small endless screw above mentioned it will be evident that on unclamping the proper screws the horizontal bar and connections can be pushed forward, or rotated about the bar itself, or rotated about the nut on the back casting forming part of the frame of the machine.

For sinking or quarrying work the frame consists of two strong side plates of cast-iron, having at their ends vertical holes for the reception of short thick pointed bars, which form the feet on which the frame rests. The bars are fixed tight by means of set screws. In the centre of each of the side plates is a bearing for a large hollow shaft, which can be turned to any desired angle, and firmly fixed by set screws; the length of the hollow shaft or the distance of the side plates apart depends on the number of drills it is intended to use at one time. On this hollow shaft, and capable of being rotated round it, is a socket, to which is attached a long shaft; this shaft has a number of rings cut upon it, so that it serves as a rack. Embracing this shaft, or bar, is a muff, having a face plate cast with it, to which a corresponding part of the casting forming the frame of the drill can be bolted. A small toothed wheel is fitted in the muff, and gears in the rings on the vertical bar. The axle of the toothed wheel can be rotated by means of a handle, and the drill can thus be raised or lowered.

Another rock drill, exhibited in the Paris Exhibition of 1867, is that of Tilger, of Mulheim, in the Ruhr district. The machine possesses the same design as that of Sach, with an automatic rotary and forward feed motion. In the Tilger rock drill the valve chest is placed beneath the cylinder; the compressed air enters by what is usually the exhaust port, and passes downwards into the valve, by which it is distributed alternately on one or other side of the piston. The valve and valve chest are exactly similar to those of Sach's. The cylinder is about 3 in. diameter, and the piston possesses the usual arrangement of a thick piston rod at the front and a thinner at the back end. The thinner has a cross piece, or transverse, sitting loosely on it, through which the piston rod can slide. The ends of the traverse slide in grooves in the side bars forming the frame of the machine, as in Sach's drill. On the thinner piston rod are two swellings, which towards the end of the stroke strike against the traverse. Connected with the traverse is an arm attached to a rocking pin, to which is attached a shorter arm, which strikes alternately against a couple of nuts on the valve spindle, and so towards the end of each stroke reverses the valve. On the same rocking pin are two short horizontal levers, which move two vertical rods on each side of the back end of the cylinder. One of these rods works into a ratchet wheel, which effects the rotation of piston rod and borer; the other works into a ratchet wheel attached to a pinion, which gears into a second pinion, and causes the rotation of the nut (attached to it), which fits on to one of the screwed bars forming the frame of the machine, and thus causes the forward motion of the cylinder. The cylinder has four lugs cast upon it, through which the screwed bar and a second bar pass, the latter being connected together at the ends by means of a cross piece; a third stronger bar runs beneath the centre line of the cylinder, &c., and is screwed at the ends into the above mentioned cross pieces. To this third bar a central pin is attached, by means of which the machine is mounted on the carriage (designed by Döring, as mentioned above).

During the driving of the Hoosac Tunnel, in Massachusetts, U.S., a rock drill invented by Mr. Charles Burleigh, of Fitchburg, Massachusetts, was extensively used. The following description of the machine by Herr Bergrath Lotner does not agree with the description of the Burleigh rock drill as patented in this country by Mr. Thomas Brown, C.E., of London. According to Lotner's descrip-

tion the rock drill acts on the same principle as a steam hammer, and is consequently a modification of Schwartzkopff's rock drill, which we have previously described, the piston striking upon the head of the borer like a hammer, which during every return stroke of the piston is gradually rotated, the machine being pushed forward as the hole gets deeper by means of a screw worked by hand. The drill can be actuated either by steam or compressed air, and is fixed upon a tripod. Each of the legs can be lengthened or shortened by sliding one half of the leg up or down, and clamping it by means of screws, so that in this manner the drill can be placed in any position or inclination required. The drill is manufactured in five different sizes, which weigh from 170 lb. to 1100 lbs., and bore holes from ¾ in. to 5½ in. diameter, and from 30 in. to 7 ft. deep. According to this description the advantage of the machine is said to consist in the fact that the shock of the blow is received by the borer only, and does not affect the finer mechanism of the machine, and its effect exceeds from three to four times that of hand drilling.

The Burleigh rock drill, as patented in this country, appears to be a very different machine. It consists, besides the drill, of a mechanism which automatically changes the amount of feed according to the hardness of the rock to be drilled through; and in this machine the valve for admitting the steam or compressed air is moved so quickly at the end of the stroke that the blow is struck with the full pressure of the compressed air, and at the same instant the valve is reversed and the exhaust opened, so that the rebound of the drill takes place naturally, and is not hindered by the pressure of the steam in the cylinder; and, as in all the newer and better arranged rock drills, the gradual rotation of the borer and the advance of the cylinder takes place during the back stroke, so that the whole force of the steam is exerted during the forward stroke through the drill to cut away the rock, and is not partially absorbed in performing other operations. To prevent the front cylinder cover being struck and broken, which might occur if the drill point should break, or should enter a cavity, or an unusually soft place in the rock, provision is made, as we have seen in other rock drills, by placing the entrance of the inlet ports into the cylinder at some distance from the cylinder cover, so that if the forward motion should be prolonged too far the piston in its advance completely covers the steam entrance, and acts as a valve in shutting off the compressed air, which is making its escape, and the compressed air thus caught between the piston and cylinder cover acts as a cushion by which the motion of the piston is arrested, preventing its coming into contact with the cylinder cover.

The cylinder is made in one casting with the body of the machine, which covers most of the rotating and feeding mechanism placed at the back end of the drill. This casting has two short (square in section) wings running the whole length of the casting, and which fit in corresponding grooves in a trough-shaped casting, forming the bed of the drill, which bed is provided with a "frustrated" conical plate, by means of which the drill can be clamped to a face plate fitted on to a bar forming part of the support or carriage for the drill. The machine, it will be understood, can be rotated about this conical plate. The front end of the cylinder is closed by a cover, which screws into it, and which is further secured by a set screw; into this cover a long stuffing-box is screwed. The back cylinder cover consists of a long annular sleeve, having at one end a groove cut in the periphery, which fits air-tight against the cylinder, a pair of set screws passing through the cylinder fit in this groove, so as to allow of the sleeve being rotated about its axis, but preventing all endwise movement. On the front end of the sleeve is screwed a ring, the outside diameter of which corresponds exactly to the diameter of the cylinder, and fits air-tight; this ring has a groove in it like the back end of the annular sleeve. Within this ring is a ring packing, which is kept somewhat tightly pressed against the piston rod by means of the compressed air on its outer surface. The piston and piston rod are forged in one piece of steel; the piston is kept tight by means of metallic rings fitting in two grooves turned in the piston. Each of these grooves is in communication, the one with one side and the other with the other side of the piston by means of small holes drilled in the piston itself, so that the compressed air finds admittance beneath the piston rings, forcing them outward against the insides of the cylinder. The borer is bolted firmly to the front end of the piston rod.

The piston rod, and with it the borer, are gradually rotated by means of a ratchet wheel, which slips over the back end of the piston rod (but is not fixed to it) next to the sleeve. Next the ratchet wheel is placed a narrow friction ring, and behind this a collar, which by means of a groove cut in its periphery and set screws passing through the cylinder prevents all endwise movement of the ratchet wheel, &c. The ratchet wheel has a feather or key fitted in it, which can slide within an inclined slot or keyway formed in the back end of the piston rod, so that during the back stroke of the piston rod, when the ratchet wheel is prevented from rotating (by means of a pawl which engages with it through a slit in the cylinder casting), the piston rod and borer are caused slightly to rotate. When the piston is making its forward stroke the piston rod, &c., do not turn, but the ratchet wheel does, the form of the ratchet teeth being such as to allow rotation in one direction, and the friction of the ratchet wheel in turning is much less than that of the piston rod and piston.

Besides the inclined slotway there is a straight slotway in the back portion of the piston rod, in which a key fixed to the before mentioned friction ring (next behind the ratchet wheel) fits and slides. This ring serves as a break on the piston, to prevent its turning back during the forward stroke from the position given it by the feather and spiral slotway. This friction ring, then, serves as a medium to make the friction on the piston during the forward stroke greater than the friction on the ratchet wheel, so that it is the latter, and not the former, which rotates during the forward stroke. On the cylinder is pivoted a bent lever, the long arm of which is provided with an adjusting screw, and the short arm with a copper pad, which can be forced with more or less pressure on the periphery of the friction wheel by adjusting the screws, so that by this means the resistance of the piston to turning can be made greater than the resistance of the ratchet in the direction permitted by the form of its teeth under the pawl when riding or slipping over the ratchet teeth, and without having to depend on the tightening up of the stuffing box at the front end of the cylinder for the necessary friction on the piston rod.

A peculiarity and advantage in this machine is that in case of obstructions caused by the jamming of pieces of stone between the side of the bore hole and the borer, &c., provision is made to prevent breakage under such circumstances. This consists in bending the pawl into a long U-shape, which thus forms a spring of sufficient stiffness not to give way under normal conditions, but when such obstructions occur as would be likely to cause breakage, if the drill were prevented from rotating the pawl will yield, and allow the ratchet wheel and piston rod and borer to rotate in a direction opposite to that which it takes under ordinary circumstances.

The valve by which the steam is admitted into the cylinder is of the ordinary D, or locomotive type. At the back end of the cylinder casting a J shaped lever is hinged or pivoted, the two side arms being curved somewhat downwards. On the extreme end of the piston rod is an enlargement, or tappet, which at both ends of the stroke come into contact with one of the side arms of the lever, the weight of the lever is such, however, that when the tappet strikes either of the side arms the momentum is such as to move or rotate the lever piece through an arc much greater than would be the case if the tappet only moved very slowly. The vertical arm of the lever is connected by means of a long narrow connecting rod with the valve spindle, so that as the tappet strikes the lever piece the valve is reversed. Owing, however, to the rapidity with which the tappet moves the lever piece is thrown so far back as to completely reverse the valve, and this is done so instantaneously that whilst the blow is struck with the full pressure of the compressed air on the back of the piston, the valve is reversed and the exhaust opened in time to allow of the rebound of the borer, piston rod, &c., taking place naturally, and is not hindered by the back pressure of the compressed air. The piston rod is of the same thickness at both sides of the piston; this is partly necessary on account of the mechanical arrangements for the gradual feed as the bore hole gets deeper.

GEOLOGICAL SOCIETY OF LONDON.

Dec. 5.—Prof. P. MARTIN DUNN, M.B., F.R.S. (President), in the chair.

Isaac Bayley Balfour, M.B., D.Sc., Inverleith-row, Edinburgh; D. Burns, Geological Survey of England, Jermyn-street; Samuel Cooke, M.A., Assoc. Inst. C.E., Professor of Chemistry and Geology, Fount Lodge, Stirling; Sandford Flaming, C.M.G., M. Inst. C.E., Durham Villas, Kensington; Rev. John Hodgson, M.A., the Vicarage, Kinver, Staffordshire; William Etheldred Jennings, B.A., School of Mines, Sydney, New South Wales; Henry Merryweather, Fairholme, Clapham; Robert Robinson, M. Inst. C.E., West-terrace, Darlington; Martin Stewart, B.A., York House, Wakefield; Geo. Eastlake Thoms, Wolverhampton; Robert F. Tomes, Weston-on-Avon, Stratford-on-Avon; and Irwine John Whitty, M. Inst. C.E., of Giridhi, East Indian Railway, Bengal, were elected Fellows of the Society.—Ephraim Brunt, Havelock-place, Hanley, Staffordshire; T.W. Cowan, Horsham, Sussex; and Henry Fox, Clarendon-road, Victoria-road, Kensington, were proposed as Fellows of the Society.—William Fream, B.Sc., Lond., Professor of Natural History in the Royal Agricultural College, Cirencester; J. G. Hochstättler Godfrey, late Chief Geologist and Mining Engineer to the Government of Japan, Elsa House, Dulwich-road, London; Herbert Goss, F.L.S., the Avenue, Sarbiton Hill; Jenkin Jones Ingram, York-street, Lambeth; John Fowke Lancelot Rolleston, St. Peter's-terrace, Leicester; F. A. A. Simons, Manley-terrace, Kennington Park, will be balloted for as Fellows of the Society.

The following communications were read:—

- 1.—"On the Building-up of the White Sinter Terraces of Roto-Mahana, New Zealand," by the Rev. Richard Abney, M.A., F.G.S.
- 2.—"Additional Notes on the Dimetian and Pebidian Rocks of Pembrokehire," by Henry Hicks, F.G.S.
- 3.—"On some Precambrian (Dimetian and Pebidian) Rocks in Caernarvonshire," by Henry Hicks, F.G.S.
- 4.—"On the Precambrian Rocks of Bangor," by Prof. T. McKenny Hughes, M.A., F.G.S.

SOUTH STAFFORDSHIRE INSTITUTE OF MINING ENGINEERS.

At the monthly meeting of members, held at the Midland Institute (Mr. THOS. PARTON, F.G.S., presiding), a vote of thanks was passed to Mr. W. Blakemore for his three papers on the "Faults of the South Staffordshire Coal Field," after which the writer promised to lay his freshly-acquired knowledge of the green rock before the Institute at the annual meeting. His information related principally to the northern portion of the coal field.

The PRESIDENT then read a paper on "Explosions in Mines." In opening the reader referred to the mines as non-fertile and fiery. In the former the main cause of explosion was want of sufficient ventilation in every working place in the mine. In fiery mines extraordinary means ought to be taken, such as the use of locked safety-lamps, and the non-use of gunpowder. When the wind was S. or S.W. mines were dampy. He need not say that the barometer was a friend to those working in mines, and showed that a fall of 1° reduced the pressure in exposed seams of 70 lb. to the square foot. But in the fiery mines of the North "blowers of gas" were so sudden, and came in such pressure as to overcome the most powerful ventilation, and exude itself against a high state of the barometer. Defective safety-lamps and the carelessness of the men were great causes of explosions in such mines. Another cause might be found in the manner of working out the mine to secure the greatest out-put in the shortest possible time. In a mine known to be dangerous, the "panel," the "pillar and stoop," the "pillar and stall," and "board and pillar" systems were unfavourable. Mr. Parton, then quoted Mr. Matthias Dunn and Mr. Warrington Smyth as authorities for some of his statements, and said those who reviled owners and managers when an explosion occurred would be surprised to find the amount of money and skill expended to prevent such occurrences. Every day appliances were being invented or tested. Whilst owners and managers were thus doing their share the colliers ought to be taught to carefully study the conditions which contribute to explosions. Mr. Parton held that as the open spaces grew greater in mines the more care ought to be exercised. His paper was only a suggestive one, and he invited all interested to consider well the subject and record their experiences. Were each one to think of his own responsibility, from the owner to the workman, and use his talents and experience, much would be done to save the country from such dreadful scenes of misery.

Mr. JOHN DUNN read a paper on "The South Staffordshire Mines Drainage." He utterly condemned the statute which gave the power to drain the district. It had flooded more mines than it promised to drain, and the money raised had been extravagantly spent. He contended that the mode of appointing commissioners, arbitrators, and surveyors was wrong, and calculated to frustrate justice. The arbitrators know nothing of the district except what they were told, and, consequently, engines were being used to pump water where no good resulted. In some places owners paid the maximum rates and only one colliery was benefited. Then, again, rates were not properly "graduated" according to the circumstances applying to each mine. On the west watershed at Netherton, where ribs and pillars were being worked, a mine was rated at the maximum, and on the east watershed a maiden mine was rated at 1d. per ton. The Act was worked for individual interests, and not for the benefit of the whole community, many mines being hopelessly flooded, and the others having all the trade. Mr. Dunn urged that as there was a movement on foot for altering the Act there should be a sweeping change. The arbitrators should be removed and men appointed who knew the district; the Commissioners, whilst in office, should receive no pay for subsidised engines or other work. The boundary lines should be altered; each district should be free to appoint its own servants, levy its own rates, and work independently. If those reforms were carried out it was possible that a modified Act would do useful work; but, in his opinion, it was only in the most exceptional state of the coal trade that a Drainage Act could confer the slightest benefit on the district.—Votes of thanks were given to Mr. Parton and Mr. Dunn, and it was resolved to have the papers printed for circulation among the members.—Mr. A. C. REES exhibited Tyndall's smoke respirator, which would enable a collier to work in choke damp, and thus extinguish fires. The invention elicited favourable expressions of opinion from the members present.

SOCIETY OF ENGINEERS.—At the twenty-third annual meeting, held on Monday Mr. Thomas Gargill, President, in the chair, the following gentlemen were duly elected as the council and officers of the society for the year 1878:—As President: Mr. R. P. Spica.—As Vice-Presidents: Mr. C. Barnard, Mr. J. Bernays, and Mr. T. Porter.—As other members of council: Mr. J. Church, Mr. F. E. Duckham, Mr. F. W. Hartley, Mr. C. Horsley, Mr. A. Rigg, Mr. J. Walker, Mr. S. Cutler, and Mr. L. Perkins.—As Honorary Secretary and Treasurer: Mr. Alfred Williams; and as auditor, Mr. W. H. Bennett. It was announced by the President that the following premiums had been awarded by the council for papers read during the year:—To Mr. J. W. Pearce for his paper on the "Mechanical Firing of Steam Boilers"; to Mr. Alfred Le Grand for his paper on "Tube Wells"; and to Mr. Ralph H. Tweddell for his paper on "Direct-Acting Hydraulic Machinery."—Votes of thanks were unanimously voted to the President and council for 1877; to the honorary secretary and treasurer, Mr. Alfred Williams; to the acting secretary, Mr. Perry F. Nurey; and to Mr. T. H. Martin and Mr. W. S. Wilkins for acting as scrutineers of the balloting lists.

TRANSMISSION OF POWER BY WIRE-ROPE.—The I. P. Morris Company, of Philadelphia, have just completed and shipped to the Calumet and Hecla Mining Company, Michigan, a full outfit of shafting and pulleys—or more properly sheaves—for wire-rope transmission. It is the largest apparatus of the kind ever built in this country. Two of the sheaves are 15 ft. in diameter, and as they are required to revolve at a high speed, are so accurately balanced that a weight of but a few ounces was sufficient to turn them, while upon the balancing ways. The outfit comprises the following principal pieces:—Two sheaves of 15 ft. diameter, one of which is fitted with Weston's patent friction driving gear; four sheaves 10 ft. dia-

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath, Dr. von GÜNDLICH, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

as possible for the time during which they were shut down. The refinery was started on Sept. 17, and has since turned out doré bars of the value of \$409,000.

(\$1,000). The directors declared a dividend of 7s. 6d. per share on Nov. 6, payable on Nov. 10, and they expect to be able to continue the payment of dividends regularly every quarter, in addition to paying off the debenture amounting to 18,000l., which fall due May 35. The commission is expected to arrive in England about January.

EXCHEQUER.—The report (dated Nov. 10) of Mr. Henry Sewell, M.E., has been published, and with it the directors issue a circular inviting subscriptions for Fifteen Per Cent. Debenture Bonds, interest payable out of profits, "to extricate the company from its immediate monetary obligations." The American creditors' claims amount to 6800l., of which 5500l. is due to Mr. Chalmers, and does not press. The directors state that explorations may now be made in the mine itself effectively, rapidly, and economically. Any discoveries of rich ore can be in this manner utilised at once when greater depth is reached, everything outside the mine being in complete running order. Rich even if at present isolated ore shoots in existing levels, they think, be followed downwards into more compact and more richly mineralised ground; this can now be readily accomplished at a comparatively small cost. It is pointed out that a mine on the Comstock lode, 30 miles distant, has made a rich strike at 1800 ft. after being barren for many years, and that the Exchequer is only 400 ft. deep. It is stated that the Exchequer Mines possess unrivalled advantages as compared with the Comstock Mines. The Exchequer Company has 7000 linear feet on the Buckeye and Acadia lodes; the latter is, perhaps, the more promising, and has not yet been tapped. The original cost of the lodes was 30,000l., and the total expenditure of the mines since the purchase has been 48,747l. The American creditors have agreed to take half their claims in cash, and the remainder in debentures, provided the remittance be prompt. Otherwise foreclosure will immediately take place, the property lost to the company, and pass into the hands of those who may reap the benefits arising from the shareholders' large outlays. The directors express their earnest hopes that by a liberal subscription the shareholders should aid in their endeavours to bring the mines into a permanently remunerative condition.

ALMADA AND TIRITO MINING COMPANY.—The directors' report, prepared for presentation at the meeting to be held on Friday next, states that the loss on the half-year's working was 886l. 4s. 3d.; including interest on debentures, 530l.; and 59l. 11s. 5d. for depreciation on a hoover and office furniture. The whole of the explorations &c. has been charged to revenue, except shaft sinking and construction of the lixiviation works, which has been charged to capital. The result of working the mines is gradually becoming more favourable. The process of treating the black ores by roasting and lixiviation has now been so far perfected by Mr. Breach that it has passed from being an experiment to an established and successful fact; and the bars of base bullion, the produce of this method, which have been received from the mines have realised satisfactory results. A second furnace is now being erected, and as there is an abundant supply of these ores, it appears very desirable to increase the number of furnaces, as any capital expended in this direction would at once command remunerative employment. The directors would express their opinion that the prospects of the mines are very much more encouraging than they have been for some time past, and that a judicious expenditure of money is all that is required to put the property again into a dividend paying condition. With a view of raising the necessary capital, it has been determined to issue the balance of the 15,000l. debentures already authorised—4400l. The half-yearly interest of the 10,600l. mortgage debentures at the rate of 10 per cent. per annum will be duly paid on Dec. 31. In the circular inviting subscriptions for the debentures the directors observe that as to the general prospects of the company's mines, it will be observed with satisfaction that Mr. Breach, in his general report says:—"Considering that the low-grade rebellious ores in the Mina Grande are now returning a handsome profit, it is not too much to say that the whole aspect of affairs has changed in consequence, and that their successful reduction, coupled with the very reasonable hope of making valuable discoveries in the Tirito Mine, will justify me in the opinion that the present prospects of the mines viewed as a whole, are superior to those of any previous period during the past two years. At the same time it must not be overlooked that with the limited means at command comparatively little can be done towards realising the hopes expressed."

[For remainder of Meetings see to-day's Supplement.]

FOREIGN MINING AND METALLURGY.

In the French iron trade working operations have been carried on upon a comparatively restricted scale, as few new orders have come to hand. Prices have begun to recede, merchants' iron having given way 10d. to 1s. 8d. per ton. This fall has occurred only in the Nord, and it can scarcely be said to be general at present; so little business has, indeed, been done that it is difficult to give prices. Many French merchants and industrialists have pointed out to the President of the French Republic that much injury is done to business and enterprise in France by the prolongation of the political anxieties and uncertainties which have so long weighed down the energies of the nation. French ironmasters do not appear to have taken much part in this rather general movement, although they must be suffering with the rest. The settlement of the treaties of commerce question appears to be postponed to the Greek Kalends. Free trade principles would seem, however, to be gaining a little ground in France, M. de Meaux, a free trader, having been just appointed a member of the Superior Council of Commerce. The proprietors of the Horme forges have decided on taking over the Buire works, near Lyons.

The state of the French coal trade remains unchanged. The weather has continued mild and rainy, and this circumstance has, of course, had some effect upon the demand for domestic qualities. As regards industrial qualities of coal, the demand for them has exhibited considerable stagnation, and this stagnation can only disappear when the industrial crisis terminates. In the absence of any striking trade news the French industrial journals are occupying themselves a good deal at present with the somewhat stale industrial statistics of 1872. French statistics are generally rather dilatory, and these returns are the latest which are at present available. In the French coal mining districts the situation naturally occasions a good deal of dissatisfaction and uneasiness. As freights have fallen, some boats have been loaded, so as to diminish stocks and to enable supplies to be available for the first frosts. This is, however, an almost useless proceeding so far as Paris is concerned, as the coal warehouses of that capital are already full. In the Basin of the Loire short time has been introduced at some pits.

The Belgian coal trade exhibits little or no animation. Sales are only taking place upon a reduced scale, and the extraction has been also curtailed to some extent. As regards prices, deliveries and contracts the situation remains generally unchanged. The present troubled aspect of French politics greatly checks business upon that market; scarcely anyone dare undertake large operations, the future being so uncertain. This indecision of the French commercial world exercises an unfortunate influence on operations in the Belgian coal trade and other branches also of Belgian enterprise. All that Belgian coalowners can do is to wait patiently for better times. M. Bourier claims the credit of having invented the machinery in operation at the works of MM. Debyayn, at the Hasard, for the production of agglomerates.

The orders received by the Belgian iron trade are not sufficiently large to exert any influence upon prices; at the same time they induce an anticipation that a certain activity will prevail in the rolling mills during the winter, so that industrialists will be enabled to go on tolerably patiently until the spring. It remains to be seen whether this anticipation is of too sanguine a character. The Dyle Workshops Company has just received an order for 50 coal wagons of 12 tons each carrying capacity, for the Ciudad Real and Badajoz Railway. A contract has been let for the construction of market buildings at Ixelles-les-Buxelles; the lowest tender submitted was 25,424l. A good deal of iron will be introduced into the new buildings, as they will have an iron roof, iron columns, &c. M. Arthur Laurent has just published an industrial map of the Mons district—that is, a map showing all its industrial works, coal pits &c. The direction of State railways is about to let at Frankfurt-on-the-Maine a contract for 1300 tons of Bessemer steel rails, 12,000 fish-plates, and a corresponding quantity of other minor accessories. A few days later the directors of the Westphalian Railway will open tenders for 1800 tons of cast-steel rails, 1000 tons of iron sleepers, and 300 tons of accessories. The direction of the State railways at Hanover is about to let a contract for 12,000 iron sleepers, and the direction of the Rhenish Railway, at Cologne, is about to order seven passenger locomotives. The German railways, it will be observed, are adopting to a still further extent the system of a metallic infrastructure. It is noticed that German, Belgian, or French steel rails have of late displaced English steel rails upon the Italian railways. Shipments of rails for Italy can now be made very readily and advantageously from Antwerp, Rotterdam, and Hamburg, and this has, probably, something to do with the result indicated. M. Smits, managing director of the Couillet Company, has died in the course of the last few days. The loss of M. Smits will be severely felt.

At the Auction Mart, Mr. Edwin Fox and Bousfield sold one-fifth part of a King's Freehold Share in the New River at 19,240l., or at the rate of 98,300l. per share. They also sold 18 New River Company's New Shares of 100l. each, fully paid, for 5590l., or an average of 310l. 11s. 6d. each.

Original Correspondence.

NICKEL, AND NICKEL COINAGE.

Sir,—During a recent visit to the United States I saw some very elegant little coins, of which I was informed nickel was the principal ingredient, although they were so totally unlike the dull and unwholesome looking nickel coins of Switzerland that I was inclined to doubt whether there was not some admixture of silver in the American coins. As I was unable to obtain particulars, I should esteem it a great favour if some correspondent would state the proportions in which the metals are mixed, the method of mixing, and the mode in which the great brilliancy is secured. The lightness of the bronze coinage, which has been substituted for the copper in England is, no doubt, a great recommendation, although the inferiority of the English bronze as compared with the French bronze must have struck everyone; and a still further advance would be made were nickel coins substituted for the bronze. A sovereign's worth of nickel change would not weigh more than one-twelfth that of bronze change, and the introduction of it would open out quite a new industry.

Some friends of mine are interested in a property which, according to the analysis of Prof. W. White, yields an abundance of nickel ore of the Eisennickel class, carrying from 12 to 15 per cent. of the metal; but it seems that at present there is great difficulty in selling it, except by private negotiation, in which there is reason to believe that the miner does not receive his fair proportion of the value. The metal nickel is not even mentioned in Mr. Hunt's Official Mineral Statistics for 1876, which have recently been published, and I cannot learn that there are any regular purchasers of nickel ores, even if they were ordered. Both Williamson, of the Goldenhill Nickel Works, in Staffordshire, and Barker, of Birmingham, seem to have ceased to deal in them, for I now never see their names mentioned. I believe that there are nickel deposits both in Cornwall and Scotland, which could be turned to good account if there were an open market for the ores and an established system of buying.

What we want to know is how much the returning charges would be for smelting the ore, and what is the real market price of the metal? I am told it is only sold by the pound—5s. to 5s. 6d. per lb. being the price charged—and that, therefore, a ton of ore can only be taken at purchaser's price, and on the risk of his "having to hold it for years." From the large quantity of nickel that must be used, seeing how common white metal has become, this cannot be true, so that miners themselves should make a stir in the matter. There are very few producers of nickel ores, I suppose, so that there would be no difficulty in their coming to a common agreement not to allow more than 10l. returning charges. The result of this would be that, taking the metal at the mean price, 5s. 3d. per lb.—that is 588l. per ton—the miner would receive for 5 per cent. ore 19l. 8s. per ton, and for (say) 14 per cent. ore 74l. per ton. Now, this I am assured the miner does not get, and that 10 per cent. ore has had to be sold for 35l. per ton; whilst, allowing 10l. returning charges as above stated, he should receive 48l. 16s. per ton. This difference of 13l. 16s. per ton is absolute loss to the miner, and is entirely due to his not knowing where to sell his ore, so that he has to deal through bargain buyers. J. H. C. Truro, Dec. 10.

LEAD MINING IN KESWICK DISTRICT, CUMBERLAND.

Sir,—The BRANDLEHOW MINE, like its rich rival neighbour, Goldscope, has been wrought from dates immemorial (long before the manufacture of gunpowder), and from those remote ages to 1864 this mine continued to produce enormous quantities of ore—a rich and profitable undertaking. The mine is situated at Newlands, Keswick. The strata formation known as the Skiddaw range of clay-slates is of soft nature, which admits of quick development. The lodes are large and masterly, varying from 2 ft. to 8 ft. wide. Gold was found to exist in the Brandlehow vein, most abundant in the gossan or surface outcrop, and in such quantities that well paid for extraction; other rare minerals were also found to exist in this mine, but not in sufficient quantity to pay the miner. Silver-lead was the principal mineral sought, and was found in large bodies.

The lodes in this mine, as also other lodes of the district, were operated on by the old men wherever seen cropping out to the surface. The backs of these veins have in many instances been bared by large streams of water flowing down the mountain side. From the operations thus made large returns of ore were derived. These facts are gathered from records which still exist. The miners of those ages experienced great difficulty in exhausting the ore. The sudden influx of water was sometimes caused by the operators meeting with a spring or fissure of water while working; other times they were driven out of their pits by the large flow of water coming down the mountain during the wet season.

Notwithstanding all these disadvantages large returns were made, which tends to show the great productiveness of the veins; indeed, so great was the mineral production of this district that large smelting-works of both lead and copper were erected, and the smelting of silver-lead and copper ores was carried out on a large scale. The mineral supply to these furnaces were the produce of this and neighbouring mines, although the mine before our readers supplied the largest quantity of lead ore, which was rich in silver—large fortunes were amassed both by the miner and smelter. The Brandlehow Mine has been, perhaps, more extensively wrought than any mine in the district. Although only sunk to the depth of 50 fms. below the main adit, the levels are extended long distances, upwards of 300 fms. in length on the course of the veins.

These long lengths of levels did consist of almost inexhaustible supplies of ore. They were found in such large bodies that the term deposits is better applied than either bunches or pipes of ore—hence the wealth of this large and important mineral field. Notwithstanding the wealth of this mine, and the immensely large profits which have accrued to its fortunate shareholders, resulting from operations between the main adit level and the surface, results of almost equal importance were obtained from the deeper workings. In the latter period of operations in the mine a large spring of water was come upon, the flow of which was 180 to 200 gallons per minute. Although this mine is situated about 25 miles inland from the nearest point of the sea-shore, yet this powerful spring of water contains about 15 per cent. of chloride of sodium. The bottom of the shaft (the 50) is in a rich vein, some parts of which are fully 2 ft. wide, solid galena. The day is near at hand when this large field for mining industry will awake from the slumber which has rested upon it the last few years.

OLD TREBURGETT SILVER LEAD MINE.

Sir,—I cannot but think that the mining community and those who "know the district," were sufficiently convinced by my letter, if, by nothing else, of the impracticability of "The Miners of Old Treburgett" themselves being in a position "to work the mine not for a few weeks only but for 12 months, in a straightforward and miner-like manner;" but as my letter has been replied to by them (?) I will adduce a few more facts which may set their minds at rest, although it is really a waste of time. There appears to me, however, a certain amount of animus pervading their correspondence, which is inexplicable. That the miners should be two months' pay in arrears is to be exceedingly regretted, and is quite sufficient to make them irate; but they should not forget that some of the largest shareholders have lost in the undertaking not only two months' wages, but the earnings of many years, which has been partly caused by the exacting conduct of the lords. They have noted throughout as is well known, in the most illiberal manner; and had it not been for the ill advised course adopted by them in distraining further exorbitant dues when the company was in difficulties, I believe that the mine would have pulled through, the shareholders would have retained their interest, and the miners received their wages. But this could only have been done by the expenditure of fresh capital, which would probably have been forthcoming had the lords met the company in a liberal and proper spirit. My advice to them is—if ever they get an offer to work the settlement at such a rate of dues as would be for the benefit of all concerned. They, and those who represent them, are sufficiently conversant with the present position of the mine to realise the absurdity of the offer of the miners, for if they could work the mine themselves surely the lords could do likewise; but they realise the necessity of fresh capital being raised to develop the concern, and consequently treat the offer with indifference. What guarantee, forsooth, could the miners give "to work the mine in a straightforward and miner-like manner?" They surely must "dream" that they are "prepared," if I understand the mean-

ing of the word. We doubt they would like to have their own way for a month, and "dig the eyes of the mine out," but, of course, they will not be allowed. Since writing my previous letter I have been at some length in ascertaining from a reliable source that I was correct in assuming that "The Miners of Old Treburgett" were really only a few of them—in fact, about half-a-dozen malcontents in respect of their wages. A large portion of the miners have left the neighbourhood, and some are still employed at the mine; but I will, if the disaffected minority wish it, in a future letter publish their names. They are aiming to be employers instead of employees, in order, if possible, to take matters into their own hands. In conclusion, my advice to them is to "mind their own business" instead of making base insinuations against those in whom the company had every confidence. AN OLD SHAREHOLDER.

LLANRWST LEAD MINING COMPANY.

Sir,—Doubtless are this every shareholder in the Llanrwst Lead Mining Company, East Craven Moor, and West Craven Moor has been supplied gratuitously with Messrs. Granville and Gould Sharp's circulars, which circulars are libellous throughout, and in a manner representing the value and importance of this undertaking; their figures are totally at variance with the company's statement of accounts. The annual meeting, which will shortly take place, will show a highly satisfactory statement of accounts to one and all of the shareholders, and will take the wind out of their factory position of the company. The directors whilst protesting the shareholders' unwarrantable and unfounded attacks recently made by circulars and letters emanating from sources which we think are too well known to be appreciated. We are satisfied that our shareholders have sufficient intelligence when they read these circulars and letters not to fall to see the animus, and now the mine is in the eve of dividends we trust no one will part with his shares. Llanrwst stands prominent for early dividends, equal to the best and most valued mine in the Principality; it will pay any proprietor holding 20 shares or over to go on the press, and thoroughly investigate it for himself. We are confident we are on the eve of it he would double or treble his interest immediately on his return. Those mine is too rich and prolific in the production of ore, as will be shown by the continuous sales of lead to be affected by slanderous statements. J. P. EDEKAY. Gracechurch street, Dec. 14.

THE GRAND PRIZE OF 1877—ESGAIR-FRAITH.

Sir,—The greatest discovery made in this county in 1877, or for many years past, is at Esclair-Fraith Copper Mine, belonging to the Cambrian Mining Company, by sinking the engine-shaft under the 10 fm. level, down deep enough to extend to a 22 fm. level, or (say) by 12 fms. of sinking. It was found by sinking the shaft the ordinary width (6 ft.), in which the vein was of the richest character, and worth fully 100l. per fathom, that, when ground had to be cut for flat and putting in eastern, &c., a valuable portion of the lode was still left standing to the north, and this was thought advisable to strip down, as it would facilitate matters for cusing and dividing the shaft, and drawing and other purposes. When, however, the second rich portion was stripped down, 2000 copper men were put to strip the third portion of the lode down. The lode is a very wide, eastern shaft varies from 30 to 50 ft. wide—that is the copper part of it; but there is a large lode still standing north, which will be found productive for lead ore. A wize has also been sunk west of the engine shaft, under the 10 fm. level, 6 fms., and this part of the lode has been valued at 50l. per fathom. It is satisfactory to learn that the real value of the ore produced from the 12 fms. of sinking will absolutely realise at the Swansea Ticketing. The Cambrian Company will give publicity to each sale, which I am convinced will more than bear out all the valuations that have been placed on them. This immense mass of ore is caused by the junction of the Esclair-Fraith proper with the Blaen Cwm lode very near the copper shaft, which is now being drained to the 20, and which is distant from Esclair-Fraith engine shaft 140 fms., and where there is a rich lode both for copper and lead. From this point eastward such a mass of ore must be sinking will never be laid open in the Principality before. Once the mine has got fairly everything into proper order for making returns on a scale not less extensive than at the Van Mine, it will show its capability in every respect, more especially as to the proportion of profits on returns, for rivaling that mine. The Cambrian Company is the grand prize of 1877, and is the best and richest discovery made during the past half century.—Gwynan, Dec. 13. ABRAHAM FRANCIS.

FLAGSTAFF SILVER MINING COMPANY OF UTAH.

Sir,—A paragraph having appeared in last week's Journal giving what professed to be an account of the proceedings at a private meeting of the promissory note and debenture holders of this company, I am directed by the board to request you to be good enough to give insertion to the following report from the minute-book of this company, as approved by the board, and recorded on their minutes:—The Chairman brought up the report of the meeting of debenture and promissory note holders, held in pursuance of the circular of Dec. 1, as follows:—That 24 debenture and note holders attended, and some 10 or 12 shareholders, and other persons, professing to be shareholders, were by the courtesy of the meeting admitted to the proceedings. The Chairman narrated the past history of the company, and showed that a more moderate estimate of the productive power of the mine than that hitherto accepted, on the statements and reports of Mr. Vincent, should in future be adopted. The board had had serious difficulties to contend with in the depressed state of the markets, and the heavy amount of litigation in the Courts, which strife was continually going on, and in some of the suits the decisions of the Court had been adverse to the company. He stated that the accounts received as to the working of the mine were satisfactory, and there was reason to expect a steady yield for the future. The last advice from the manager were referred to as confirmatory of this view, and the letter on the subject, which had arrived the day immediately preceding the meeting, and which the Chairman had not seen, was read to the meeting, and generally approved.

The Chairman next pointed out that despite the various appeals made to the shareholders to take serious note of the embarrassment of the company, and the load of debt accumulated during past administrations, they had shown an unfortunate apathy, and had not responded to the repeated invitations to inform themselves of the state of affairs, and that by not availing themselves of the assistance afforded by Mr. Pearson, who by procuring 4000l. at a serious crisis in the recent negotiations, which had culminated in the late bankruptcy of the company, he had preserved the position, and by which the indebtedness of the company had been provided for, had allowed a favourable opportunity to pass unheeded, and had failed to apprehend their true interests. These contracts, and the agreements made by Mr. Pearson, were subsequently explained by that member of the board, who stated that he had been quite willing the company should take the loan he had made in its behalf off his hands at their earliest convenience, and that the high rate of interest chargeable in Utah might advantageously be taken by the shareholders the selves, instead of paid to him or his financial friends, and he expressed the opinion that although a severe blow had been struck at the company by a recent decision of the Court at Utah, in which the company had been condemned in 445,000, there were very decided views on the part of the company's legal advisers that this adverse judgment would be reversed on appeal, and that steps to obtain a reversal of the judgment had been already taken.

Mr. Pearson also asked the attention of the meeting to the consideration that although there was no real conflict of interests between the debenture holders and the general body of shareholders, yet it was obvious that, in consequence of the mortgage being called upon to foreclose in the interests of the bondholders. The position was one in which it was desirable for the shareholders to come to the assistance of their lessee, who he feared would not, under the unexpected demands made on him, be able to make the necessary remittances for the dividends due in January next on the debenture bonds. An alternative no doubt might be found by which the company might take the concern into their own hands and control to raise the 4000l. and secure the purchase of the South Star and Eliza Mine, in which object he was ready to take the company—to provide for the promissory notes now falling due, and so save it from the imminent danger it was placed in, and the probability of liquidation to which it was exposed. Considerable interruption was made by the handful of noisy agitators who referred to, and some enquiry was made as to the conduct of Mr. Vincent in soliciting people to buy shares upon the terms of giving him a portion of the profits of the speculation, which charge that gentleman was obliged to admit. "The great body of debenture holders was but poorly represented, and as the object of the conference could not be gone into in consequence of the disturbance, the Chairman and two of his colleagues, with the respectable portion of those present, left the room."

The resolution mentioned in your Journal could not be legally put off carried. The Chairman had left the chair; and the agitators, prompted thereto by Messrs. Vincent and Garne, took advantage of the occasion, and declared the resolution carried. Great Winchester-street, Dec. 14. A. A. DE METZ, Sec.

FLAGSTAFF MINING COMPANY.

Sir,—At the meeting of Flagstaff debenture and promissory note holders, held at the Cannon Street Hotel on the 7th inst., Mr. W. C. Harvey (the chairman), in attempting to extricate himself from the grave difficulties in which he found himself involved, due to certain letters which he had confessed (to parties present at the meeting) he had written to Mr. Hunter, with a view to securing a portion of the profits of the lease granted to the latter, attempted (as a sort of counter-irritant) to fix a stain upon my character (perhaps my professional character, as well as that of a director of the Flagstaff Company), and in doing so, most dishonourably alluded to a transaction which I had with a certain firm of prominence in London, and which transaction resulted from a casual acquaintance before I ever even thought of joining the Flagstaff board. The suggestion to buy some shares in both the Flagstaff and New Quebrada Companies (which was done) came from a member of the firm, and was with the object (as regarded the former) of holding them till they reached at least 5l. per share. This in my mind could in no way affect the interests of any of the shareholders, except for good, as the shares were at that time below 2l. I, personally, bought a very considerable number of Flagstaff shares at the same time, every share of which I hold to this day. The firm alluded to did sell out their shares, but wholly against my will, and made a large profit, of which I did receive a relatively very small portion, but before touching one farthing of the money I laid the transaction, with all its circumstances before Mr. Harvey and Mr. Pearson, both of whom quitted justified, under the circumstances, my acceptance of it. I may add that I have always entertained

HOLLOWAY'S PILLS—A REMEDY FOR BILIOUS AND LIVER CO-PLAINTS.—Those who suffer from bile and liver complaints should try the effect of this valuable remedy, a few doses of which will make the sufferer feel elastic and vigorous, remove all impurities, give a healthy action to the liver, and strengthen the stomach. If bilious attacks be allowed to continue without using such a preventive, more serious maladies may arise, and the sufferer be consigned to a life of sickness.

Holloway's pills are an extraordinary remedy, as they immediately remove the acidity of the stomach, indigestion, debility, and nausea, prepare the food thoroughly for assimilation, rendering each tributary organ perfect in function, and stimulating the kidneys.

Mining Correspondence.

EPPS'S COCOA—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal affliction by keeping ourselves well fortified with pure blood and a properly nourished frame."—*Civil Service Gazette*. Sold only in packets labelled "JAMES EPPS & CO., Homoeopathic Chemists, London."

GOGINAN.—Dec. 12: The western shaft to sink below the 130; lode large, containing a little ore throughout; ground favourable for sinking, and good progress will be made. The 130 to drive west of western shaft; lode here producing good ones of ore, and we hope it will soon improve. The 130 to drive east of western

MELLANEAR.—John Gilbert, Dec. 12: We set the following bargains on

whilst 1316 flasks were shipped away. On the other hand, a further quantity has been returned to San Francisco from Hong Kong, crossing shipments from San Francisco to Hong Kong. Truly an unaccountable procedure.

FOR COPPER, TIN, LEAD, &c., apply to—
MESSRS. PELLY, BOYLE, AND CO.,
SWORN METAL BROKERS,
ALLHALLOWS CHAMBERS, LOMBARD STREET, LONDON.
(ESTABLISHED 1849.)

METAL MARKET—LONDON, DEC. 14, 1877.

	Ores.	Regular.	Unwrought or part wrought.
1875.....Tons	48,407	31,620	26,396
1876.....	50,899	39,440	35,941
1877.....	104,621	30,120	37,255

By the above figures it will be seen that an enormous increase has taken place in ores, and that the supply of other kinds have also increased, whereas it will be seen that the supply of unwrought copper has decreased. This is due to the fact that partly accounted for by Australia supplying India and the American Continents. The exports of wrought and unwrought copper for the years—

1871	1870	1876
Tons 13,620.....	15,923	13,263

This is a particularly unsatisfactory statement to have to make, for it is an unmistakable proof of the decline in our shipping trade. At the same time this year, although below that of 1875, does not compare so very unfavourably with that year, and the figures would seem to indicate that there was too much shipping in 1876. Nevertheless, we are sorry to see our exports of 1877 under those of the two previous years.]

By the mail from New York Dec. 1 the market there was reported quiet, but manufactured and yellow metal continued quoted about previous rates. New sheathing copper 28c., and bolts and braziers, 30c.; yellow metal sheathing, 20c. bolts, 25c.; yellow metal nails, 20c.; English yellow metal sheathing, 15½c. 16c. in bond. Ingot for present delivery very quiet, and small sales only, at 17½c. to 17¾c., but speculative purchases have been effected for forward delivery as high as 18 to 18½c. By advices received from Bombay and Calcutta, no improvement has taken place in India to encourage merchants to ship at anything above previous rates, but rather the other way. Exchange is lower, and freight is higher, therefore they require prices to be lower to meet these alterations. Australian is scarce, and occupies a good position, and may advance in value while other kinds recede; 75s. has been realised for Wallaroo cake, and Burra is wanted to cover previous sales, and on that account alone may shortly run up to equal value with Wallaroo. It is said that during the last two or three weeks the Tharisa Company have let out about 6000 tons of chiefly tough on the market. If this is a correct statement, it will be a profitable sale, and not overladen—but it is probable that it will be the outlet for other makes of tough and Chilli. The goods do not seem big that we think the rumour should be received with caution; but if it be correct all we can say is that it appears a venturesome business, and we wish the holders well out of it.

IRON.—The demand for this metal is extremely limited, and orders are given out so slowly, and for such limited quantities, that the works are prepared to make a slight concession in price for anything like a fair quantity and good specification. Merchant bars of common quality are obtainable at 5*l*. 15*s*. in London, but this price is no temptation to shippers, for the foreign markets are over sup-

filled with Belgian iron, and as they are still to be bought cheaper than English the orders are lost to the English houses. It would be exceedingly gratifying to be able to observe some indications of a return of the former demand, for many believe, and not without sound reason, that a good iron trade would be the foundation for a general improvement in the demand for other metals; but, however near we may be to a revival, it certainly is not visible yet awhile. The Belgians are not, however, without other resources, and are not so much as yet upheld by financial houses, and that one after another are collapsing, that the entire country is comparatively small, and that when a really good demand sets in they will soon be filled up, yet it is by no means satisfactory to know that when we most want orders, such as at the present depressed times, we have the least chance of getting them, and it is disagreeable also to know that the Belgians get the first choice of the orders even in good times. The Belgians have considerably increased their production of late years, and although current prices may not pay the present proprietors, and although they are not so much as yet employed in the work, will be employed, and only pass into other hands under more favourable conditions, starting without liabilities or outlay a profit may accrue where a positive loss was previously incurred; but our position ought to be in advance of other countries, and not behind them. We must keep prices down in order to compete successfully with foreign competitors. Our export trade has suffered so much from the shortsightedness of sellers maintaining prices unduly long that everyone should be particularly guarded in the future to avoid being led into previous errors, and

The advice from the several iron districts show great dulness to exist. In Birmingham there is very little business doing, but former rates are mostly quoted; a few orders have been placed for pigs without reduction, but bars and sheets have been obtained at slightly reduced rates. The Sheffield trade is still very bad, and accumulates. The trade at Leeds continues dull, without signs of any change for the better; manufacturers are very indifferently employed, and are not turning out half what they could do, consumers being sparing this month, and prefer to delay their purchases for stock until next year. In Rotherham the local trade has not improved, and business is also reported very quiet at South Durham; prices are slightly reduced, and a few orders have been secured in that way; stocks have increased, and the tone of the trade is unsatisfactory. From Barrow the accounts received are not quite so gloomy; forge iron is selling at reduced quotations, and stocks are increasing. At Middlesbrough a private meeting of ironmasters is reported to have been held for the purpose of maintaining prices—41s. for No. 3 and 40s. for grey forge; but buyers cannot be induced to give such prices. The resolutions only tend to restrict instead of increase prices. By the mail leaving New York on the 1st inst. it was stated that the market, with the season so far advanced, has relapsed into a state of quietness, with more sellers desirous of closing sales. The recent advance has not been maintained. In Scotch pigs the market has not varied very much, and m.n.s. are now quoted 52s. 1½d. cash.

SHIPMENTS.		
Week ending Dec. 9, 1878		Tons 8,372
Week ending Dec. 8, 1877		5,221
Decrease		3,151
Total decrease for 1877		19,443
Imports of Middleborough pig-iron into Grangemouth:—		
Week ending Dec. 8, 1877		Tons 5,512
Week ending Dec. 9, 1878		4,330
Increase		1,182
Total increase for 1877		72,647

In blast Dec. 9, 1876	118
In blast Dec. 8, 1877	90

TIN-PLATES.—The demand for America is fairly good, and manufacturers are firm at previous rates, and some are trying for slightly higher prices; but for the Continent and other parts there is very little doing. Prices are extremely moderate, but any attempt at an advance should be made very cautiously, otherwise orders will be returned unexecuted, and, perhaps, not repeated.

STEEL.—This metal is improving, and the Indian demand for railway material is large. Russia is also buying for military lines and rolling-stock, but in war materiel the trade is slack. The home lines are also buying pretty freely, and prospects are decidedly brightening. The New York market also reports a considerable enquiry for steel rails; the future of this metal is very promising, and likely to supersede to a very great extent both iron and copper, it can now be produced in such a superior manner, and with such a degree of softness and finish, as to prevent the slightest friction.

LEAD.—During the first eleven months of this year the importations of pig and sheet have amounted to 85,936 tons, against 75,617 tons in 1876, and 72,568 tons in 1875; and the exports are 39,526 tons for 1877, 33,459 tons for 1876, and 33,401 tons for 1875. The demand is quiet, and prices are again quoted slightly lower.

SPELTER.—The imports of this metal, both of cake and rolled, are greatly increasing. From January to the end of November there were 30,791 tons of cake, against 25,548 tons in 1876, and 20,015 tons in 1875, and manufactured 286,633 cwts., against 263,027 cwts. in 1876, and 267,876 cwts. in 1875; and the exports of spelter and zinc combined amount to 109,562 cwts. in 1877, 105,849 cwts. in 1876, and 133,580 cwts. in 1875. The prices keep tolerably steady at about 19*l.* 1*s.* for ordinary Silician brands.

TIN.—In the beginning of the week prices dwindled down to 66½ for both Straits and Au-tralian, but the market has somewhat recovered since, and sales for onward delivery are reported at much higher rates. The future course of the market will be fairly tested during the next three or four months, and if the supplies in that time are not in excess of the demand, dealers will understand better how to manage their course; hitherto the production has been enveloped in mystery, and few would venture to buy beyond actual requirements. The tremendous rise in price gave the market a severe shaking, and has thoroughly tested the strength of holders; many have retained their stocks with wonderful tenacity in the face of such a serious decline, and those who have continued to hold on deserve all the reward they will meet with. The wisdom of their policy is another matter, for experience proves it is better to go with the stream than against it; and if they had done so when the market began to turn they would have saved themselves terrible losses, and could have sold at a price which would have secured them a considerable advance on the present demand for tin plates, and the full price for the tin. The present will tend to check any improvement in price, but a slight advance in present rates will not affect the legitimate business either one way or the other, as there is nothing in the price to interfere with consumption. It is a question of supply and politics, the supplies may actually show a falling off, but the good effect which this would produce would be counteracted by any bad political news. The recent lesson which was derived from the hasty advance to 71½ ought not to be lost sight of; sellers must realise when the demand is, or otherwise they will perhaps have to take a further fall in price. As the country surrounding the markets is often glutted with tin, it is surprising holders are not more on the alert. This is not the time to anticipate a long rise, sellers must be satisfied with a small return, for their chance of making any at all may be lost.

QUICKSILVER is unchanged, at 71.50. There has been only a small business doing at this, but importers appear firm, and decline all counter offers. An exceptional importation from the East has arrived, but has not been offered on this market. California remains steady at 44 1/2 to 45 cents, with moderate supplies, only 731 flasks having been received during the week ending Nov. 2.

THE IRON TRADE.—(Griffith's Weekly Report).—Friday Evening. A limited business has been transacted during the week in Scotch pig-iron. The quotations on the Glasgow and London Exchanges have remained without change during the week, and our telegraphic buyers a shade less. This is 1d. below the price last Friday. The makers have made little change since last week, as will be seen from our quotations.

Sp.: Monkland, 53s. 6d., f.o.b. Glasgow. Glasgow, 52s. 6d. Bunn's 51s. f.o.b. Ardross; Shotts, 51s., f.o.b. Leith; Kennel, 52s. 6d.; Edginton, 52s. 6d. In the raw material in all centres manifests symptoms of improvement. The organised effort of the Scotch ironmasters to restrict the production of the bulk of the trade has led for increased output, followed by the action of the Cleveland ironmasters to hold the market at better times, must have a great effect. Already in almost all centres consumers of pig iron are arousing to a sense of the situation, and show more disposition to enter into long contracts for their supplies of pigs. At Barrow, on Monday, the market for contracts for the firm, with a moderate business doing. The smelters are not desirous of higher wages, and the ironmasters are pressing quarterly meetings. At Middlesbrough, on Tuesday, very few sales, the effect of the same measures for the moment being felt. In the hands of middle men, who are selling their stock below the official basis of 41s. for No. 3. A meeting of the Cleveland smelters will be held on Tuesday to arrange for the immediate blowing out of a number of furnaces—probably 250, in Staffordshire and Shropshire native brands are well sustained, and the demand in the north of England for iron for the supply indicates their feeling in regard to the raw material in 1878. In the finished trade there is no change to record. Manufacturers of specialities in Staffordshire are fairly employed, but the general trade continues unsatisfactory, though not without indications of improvement. In Cleveland the finished iron trade is in a very depressed state, excepting in the plate trade, and one or two other branches. In tin-plate a moderate business is doing, and prices are steady. In the manufacture of English tin is relatively. Australian unchanged. Copper has improved all round 12s. to 14. Lead and spelter somewhat weaker. Other metals no change.

Messrs. FIXLEY and ABELL.—**GOLD:** We are without any arrivals to report this week, but the demand for the Continent has been so limited that the small orders to hand can wait till the delivery of the 100,000 per Kashegar, from India and China to-morrow: 100,000, American gold coin has been withdrawn from the Bank for shipment to New York, and 20,000, sovereigns, for the Brazil. The Caspian takes 10,000, to Halifax, the Tagus 25,000, to the Brazil, and the Khedive 600, to Alexandria and 7000, to Singapore. —**SILVER.**—Business continued to be about as usual, varying from 5½d. to 54d. per oz. from the date of our last circular (6th inst), until yesterday, when, upon the result of the tenders for the Council drafts becoming known, the market became quite disorganised, and it was very difficult to get any quotation. To-day rates are somewhat steadier, and we give 53½d. per oz. was sold at 51½d. to 519½d. from New York, and about 318,000, from Germany, but the Government is not selling at the prevailing low rates. The Khedive has taken 103,000, to India.

The MINING SHARE MARKET has been moderately active this week, and a fair business transacted in a few lead mines. Tin and copper shares dull.

The mines chiefly dealt in have been D'Eresby Mountain, Roman Gravel, West Chiverton, North Laxey, Rookhope, Glenroy, Pary, Mountain, West Wye Valley, Grogwinion, Van, Great Laxey, Leadhills, Pateley Bridge, West Pateley, and a few others.

TIN MINES show very little, if any, change since our last. scarcely any business is doing in them. Dolcoaths are quoted 33 to 35; Carn Brea, 43 to 45. West Basset, 1½ to 2; at the meeting in Cornwall, the accounts showed a loss of 159*l.* on the quarter's working, and a balance was shown against the mine of 25,127*l.* A call of 16*s.* per 6000th share was made. The tin sold, 156 tons, realised 6040*l.*; copper, 195*l.* The costs were charged up to Dec. 1. The report stated that an improvement had taken place in the 124 and 130 fm. levels east.

and 130 ft. levels east.
East Pool, 94 to 10; Penstruthal, 5s to 7s. 61.; South Condurrow, 9 to 94; South Frances, 3s to 34; Ticroft, 13 to 15; Wheal Agar, 4 to 24; Wheal Basset, 9 to 11; Wheal Grenville, 24 to 3; Wheal Jane, 14 to 14; Wheal Kitty (St. Agnes), 24 to 24; Wheal Porvor, 6 to 64; East Lovell, 4 to 1. Cook's Kitchen, 2 to 24; at the meeting on Thursday the accounts showed a loss of 864, and a debit balance of 2701. A call of 7s. 6d. per share was made. The tin sold realised 2878. The costs for four months were 3756d. The report states that by suspending operations on Dawkins' lode the costs will be reduced 200l. per month. New Cook's Kitchen accounts showed a loss of 474l., and a debit balance of 931. A call of 4s. per share was made. West Frances, 34 to 44; at the meeting here a loss was shown on four months' working of 56l. The tin sold realised 4199l. The costs were 4247l. The tin raised was more than in any former period of four months, and the agents hope to keep up the quantity for the next meeting.

COPPER MINES still remain very quiet, with scarcely any business doing in them. Copper, however, has gone up a pound or two, and should it further advance a little more spirit may be thrown into copper mines. Devon Great Consols, 3 to 3½. Parys Mountain, 10s. to 11s.; the branch lately opened in the 90 cross-cut south is yielding saving work both for sulphur and copper. Hingston Down, 5s. to 7s. 6d.; West Tolgus, 6s. to 71; Marke Valley, 4½ to 1; Wheal Crebrol, 1 to 2; Prince of Wales, 3s. 6d. to 5s. 6d.; East Caradon, 15s. to 20s.

LEAD MINES have been more dealt in than any other mines, and some have advanced in price. Great Laxey are quoted 21½ to 22½ West Chiverton, 13½ to 14½; Great Bliffe, to 3. D Ershay Mountain has further advanced to 50 to 60; the new discovery in No. 4 has continued worth 3 tons of lead per fathom, and the lode in No. 3 level as it approaches the rich winze, the point for which the company was started, is coming into ore, and worth 1½ ton of lead per fathom.

Roman Gravels, $7\frac{1}{2}$ to $7\frac{3}{4}$; the 105 shaft is worth $1\frac{1}{2}$ ton per fathom, the 106 north, 1 ton. The usual sampling next week. Glenroy, 15s. to 20s.; the lode here continues the whole width of the shaft, and contains a little blende. North Laxey, $\frac{3}{4}$ to $\frac{1}{2}$; the 146 shaft has improved; is now 2 ft. wide, and producing saving work for the washing-floors. Van 39 to 32; the sale of lead this month (500 tons) realised 628s. 15s.; blende, 817s. 10s.; total, 7106s. 5s. East Van, 3s. to 4. Plinlimmon, 4s. to 6s.; the lode in the bottom level (the 36 east) is worth $1\frac{1}{2}$ ton of lead per fathom. West Tankerville, 12s., 6d. to 15s.; the sale of lead here realised 433s. 2s. 6d. Pateley Bridge, $3\frac{1}{4}$ to 4; the particulars of the meeting will be found in another column. The accounts show a debit balance of 3791s. 18s. 5d. The costs at the mine from August, 1876, to October, 1877, was 4773s. 13s. 4s.; lead sold during same period 11603s. 10s. 41; London expenses, 549s. 3s. 4d. The capital account seems to stand thus. Out of the 4000 shares of 5s. each only 3000 were issued, which gave 15,000s.; out of this 11,000s. was paid to vendors; evidently the mine, one of the best speculations in the market, has been crippled for want of working capital. To improve this state of things the directors were authorised in April last to issue 5000s. debentures, but only 2610s. worth were taken up. The produce of last month was 39 tons of lead, worth 570s., got at a cost of 360s., so that it would seem all that is required to bring the mine into a profitable state is more capital.

West Pateley, 2 to 2½. Tankerville have declined to 4½. 4½; Llanrwst, 1½ to 2½; Caron, 2½ to 3; Herodsfoot, 8 to 8½. Rokkpohe, 1 to 1½; these shares are flatter, not from any falling off in the mine, but from the necessary alterations, we are informed, in the dressing-floors, which delays the samplings. Leadhills, 4½ to 4½; this mine is looking well. The 55, south of Jeffry's shaft, on Brown's lode, is worth 4 to 5 tons per fathom. The winze below the 55 north is worth 4 to 5 tons per fathom; north end, 2½ tons. In No. 1 pitch, in the back of the 10, the lode is worth 16 tons; No. 2, 4 tons per fathom; No. 3, 5 tons per fathom. Grozwinion, 3½ to 4½; Wye Valley, 2½ to 3; West Wye Valley, 3½ to 4½; Pennant, 4½ to 5½; Holway, 5 to 5½. Gorsedd and Merilyn, 5 to 5½; the sale of lead on Thursday (50 tons) realised 671*l.* 5*s.* St. Harmon, 2½ to 3; Red Rock, 2 to 2½.

IN FOREIGN MINES Argentine, are 24 to 3; Condes, 24 to 3; Bue-
Tent, 3 to 34; Multafalt, 44 to 6; Eberhardt and Aurora, 64 to 4;
Chontales, 11s. to 13s.; the advices just received show a profit for
the month of October of 229%, although the stamps was idle eight
days, and 95% are charged in the costs for repairs to machinery.
The gold returned is estimated at 780%, and the reports are very sa-
tisfactory. Exchequer, 4s. to 6s.; Flagstaff, 14 to 18; Javali, 6s. to
8s.; New Zealand Kapanga, 1 3/16ths to 1 5/16ths; Lust Chance,
3 to 1; New Guineadga, 24 to 24; Pestaran, 1 to 8; Port Phillip,

REMARKS.—In last week's report we commented upon the healthier condition of our markets generally, their comparative safety against possible panic, and the probability of a gradual restoration and development of trade, provided the reduced prices were allowed to continue; but in referring to the advantages thus already obtained, we also stated that any disturbance to the existing equanimity would most assuredly injure the markets, by jeopardizing their position and postponing the general resuscitation. It is, therefore, to be regretted that a speculative feeling of some dimensions has just been displayed in copper, which seems calculated to affect the legitimate demand without giving any permanent relief or stability to the market; and for this reason, that speculation unsupported is worse than useless, for although its duration may be fleeting yet it is frequently productive of mischievous consequences, and more particularly at a time like the present, when it completely undermines confidence, and weakens instead of strengthens quotations. As speculation to be successful it should be based upon a reasonable basis, and a legitimate business, but yet the slightest sign of a general improvement, in fact trade is reported to be fuller than ever, and not until the political turmoil which agitates the Continent of Europe is over will there be any security, or any considerable increased demand. What is taking place now, therefore, is chiefly speculative, and in anticipation of what may be hereafter; but this is very risky, for all commerce and industry must be carried on with extreme care and caution for some time to come, and not under excitement, or prematurely forced, otherwise the result will doubtless prove very unsatisfactory, and greater difficulties will be encountered than has hitherto been experienced. In flourishing trade on a sound basis, and under the existing circumstances there is extreme risk involved in entering into and undertaking extensive contracts, and which necessitates the production of undoubted proof of power to fulfil and perform such contracts, for be it remembered that credit has suffered immensely, and the financial affairs of the community at large are anything but flourishing, and capitalists are not prepared to venture on any investments in metals until the future course of politics is more clearly defined. The crisis is not considered to be past, and we must wait for further events of a more definite and decisive character which has taken place lately in political circles. The military movements in Turkey have succeeded one another so rapidly, and with such varying results, that they tend to create the greatest consternation and confusion, and to completely paralyse trade.

direction, and do not completely paralyze trade. As Russia was expected to follow immediately, but the Russians receiving an unexpected rebuff at Erzerum darkened these prospects, and the successes of the Turks at Elena apparently extinguished them, but since the fall of Plevna the chances and hopes of peace are again revived, but as yet nothing positive has taken place. So it has been with the political affairs of France. No sooner is M. Dufaure consulted in respect to the formation of a cabinet than everything is reported to be arranged, and the effect is something marvellous, but within a day or two afterwards, when it becomes known that the whole affair had been a mere holding of a candle, the public mind is again thrown into confusion, and knows what conclusions to draw, but again they return to a Dufaure Ministry, and all is hopeful expectation. One thing, however, is certain—that with these constant changes and agitations there can be no progress in business. Although there may be no outbreak in France, yet politics appear far from being in a fair way of a speedy settlement, and while this is so there is little prospect of trade immediately getting better, and less probability of consumers paying higher prices. But the great problem of the day, after a crisis in Eastern Europe, and one of the most conspicuous in the history of the world, has been before any other, and the European campaign in favour of Turkey or Russia is comparatively of small importance to it. The crisis seems fast drawing near its head, and the Northern Powers are evidently bent upon the spoliation of Turkey, and there are so many interests to satisfy that the demands upon Turkey must necessarily be large. Russia will expect, and will probably take, the lion's share, Prussia must be respected, and Austria considered, Roumania satisfied, and Servia's boundaries extended. Montenegro cannot be overlooked, as Greece is not to be trifled with; and last, but not least, the interests of Italy must be taken into consideration, not by territorial considerations, but only by establishing her power at strategic points; so that, supposing the war ended, there will be many difficulties and disputes to overcome. The only guarantee of safety for business men at such a critical period is to remain quiet, and not be influenced by speculative ideas or carried away beyond their reason by any momentary excitement. The course of trade will not be turned all at once, and anyone who imagines that our inactivity will be suddenly succeeded by any extraordinary activity will find they have entirely misunderstood the severity of the present depression of trade, and the perils which surround the future.

COPPER.—This market has undergone a change. Some may think it a favourable one, but there are some who differ from that opinion. In regard to the matter of price, it is so far favourable that higher rates have been paid, and those who have sold are thus benefited ; but to test the correct and full value of a change it is necessary to take other things into account. The sale of the Tharsis copper at 188½ lowered the company of an accumulated stock, and being rather a large quantity, will take time to dispose of. It is not probable, though it is not impossible, that the buyers of this bought it some time to dispose of it, and that they will have the benefit of a large parcel of copper is not much advantage to the open market, unless it is from weak to strong hands. Now, this is not the case in the present instance, and if the dealers and consumers have well supplied themselves from this source, what have other sellers to look forward to ? The demand for English tough is at least temporarily satisfied, and if smelters cannot effect sales freely of their several productions they will certainly not be buyers of Chili produce at enhanced rates. Besides the distribution of so much Tharsis copper must affect public stocks, and, as the Tharsis Company has been enabled to sell at a low price, and gradually to make the market, the sellers will have continued to participate in the general demand, and as the Tharsis copper is extracted from pyrites, which is not included in the public stocks, the demand for Chili on that account is likely to be lessened, and statistics will probably show no great improvement ; but there is not only the fact of an enormous quantity of Tharsis becoming suddenly available to the detriment of other brands ; but there is no demand to speak of for manufactured, so that with a probable diminution in the demand for ordinary English tough, owing to the Tharsis having in a great measure satisfied current requirements, and the absence of Indian orders, the market will not have a large sustaining power from other sources. It is probable, therefore, that the increased sales, not that present prices are dear, but they have been advanced by means of speculation at a time when the trade is very dull, and unprepared and unable to follow an upward movement.

side is very bad, and unprepared also to follow the upward movement. The great amount of harm done, but it has gone decidedly too fast, and when this is the case there is always the inevitable reaction to follow. Many will wish to secure their profit, and they are right in so doing, for an actual realisation is at all times to be preferred to a visionary one on paper, and there is no scarcity of supply, or expectation of excessive demand, or any other prominent feature to fall back upon; it is merely how long will the game of speculation last. The favorite medium of speculation is Chill bars, but it is now extending to ores and furnace stuff; but if the difference in price between Chill bars and English tough is reduced below its average it makes it rather dangerous to buy them, and just now they are certainly too high in proportion to what can be realised for English tough. Some local feature in speculation will have to continue their operations and keep buying and selling, and hold posts for them to depend upon the export or the home-trade to afford them any relief. Our market this week has been labouring under excitement, and that is an unhealthy sign, and may

by J. Richmond, 8 1/2 to 9; the directors here have declared a dividend of 7s. 6d. per share. Cape Copper, 33 to 35; the dividend here is 7s. 6d. per share. Frontino and Bolivia, 2 1/2 to 2 3/4.

The Market for Mine Shares on the Stock Exchange has shown extremely little animation during the week, and the tendency of quotations—with one or two exceptions where the shares are chiefly in the hands of the promoters, who can thus quote any price they choose in order to give buyers the apparent advantage of purchasing below current quotation—has been decidedly downward. The Cape Copper Company has declared a dividend of 17s. 6d.; the capital originally subscribed has already been returned more than four times over, and there is every prospect of the prosperity of the company continuing for many years. The Richmond Company's report for the meeting on Thursday next is decidedly favourable so far as the mine is concerned; no less than 12,020 tons of ore have been treated since the termination of the litigation at San Francisco, the bullion obtained being of the value of \$373,000. The appeal is to be prosecuted, though the opinion of most disinterested parties is that it cannot succeed. It is stated that the costs payable to the Eureka Company were reduced upon taxation from \$37,000 to \$300; it would be interesting to know how much in all the litigation has cost the Richmond Company, including payments to witnesses, experts, and so on. No doubt appears to be entertained as to the Richmond being permanently remunerative, irrespective of the disputed ground. The Exchequer Gold and Silver Mining Company are inviting subscriptions for debenture bonds, maturing in two years, secured upon the entire property of the company. Fifteen per cent. per annum is the rate of interest offered, but this is only to be payable out of profits. The company's American debts are \$500,000, of which \$300,000 is due to Mr. Chalmers does not press. The directors state that the creditors have agreed to take half of their claims in cash if remitted promptly, and the remainder in debentures. Unless this be done foreclosure will immediately take place, and the property will pass into the hands of those who may reap benefits arising from the shareholders' large outlay.

The long-looked-for report of Mr. Henry Sewell upon the mines of the Exchequer Gold and Silver Mining Company has at last been published; as regards the property it is not unfavourable, but it shows that little, if any, useful work has been done in the mines, and that the concern is deeply in debt, and that the creditors being clamorous for their money, the shareholders have instantly to decide whether they will risk 10,000, or 20,000, more, or let the property be transferred to the creditors by the local law courts. It is a curious fact that Professor Price and Mr. Henry Sewell, who may be regarded as equally sound geologists, should totally disagree as to the nature of the rock in which the mines are situated; Prof. Price's opinion will probably have the greatest weight in America; in this country both authorities will have their advocates. Professor Price says the rock is a variety of gneiss, and Mr. Sewell says it is porphyry, and adds that the different country rock is truly a great variety, for porphyry in most countries is one of the most congenial soils for the production of silver, whereas trachyte never carries ore of any class. Mr. Sewell regards the veins as true fissures, of comparatively recent origin. He does not anticipate finding ore between the 200 and 1000 feet. In the 300 there is 10 ft. of very promising looking ground, spotted about with rich ruby ore, worth thoroughly prospecting. In this level the lode varies, and becomes hard and compact, leading him to expect that future explorations may discover a body of rich ore. The 400 level is insufficiently explored to face they have ruby silver spotted all over the quartz, indicating the possibility of meeting a body of ore. He recommends a winze to connect with a main winze on the lode, to facilitate cheap and expeditious exploration. He would have preferred sinking the lode, as cheaper and quicker, to the perpendicular shafts and cross-outs which have been made. The general mass of ore in sight is too poor to extract, but the finding of small parcels of good quality and of specimens of ruby ore assaying \$800 a ton is a recommendation continued exploration, especially to utilise the costly works, mills, &c., now useless. The past of the company has, he says, been the chronic disease of many English companies in the United States—first sending out a man who was not a theoretical or practical mining engineer, nor even a practical miner, for he had never even seen a mine in his life; then the surface expenditure has been recklessly premature. About 50 tons of ore worth \$70 per ton might be sorted out of that lying at the mill. He advises payment of the company's debts, and the exploration and development of the mines. The lodes are not hard, and easy of driving; they have lumber and fuel for the cutting, and a good wagon road two miles downhill to the mill, which are advantages seldom found in mining districts.

Devon Great Consols, 3 1/2 to 3 3/4; owing to a further advance this week in copper these shares have been in better demand. About 99 tons of copper ore are for sale next Thursday, and a considerable advance on last month's price is expected. Cape Copper, 32 to 34; the directors at their meeting on Tuesday declared a dividend of 17s. 6d. per share, free of income tax, payable on Dec. 24, making 29s. 12s. 6d. returned as dividends on each 70 share. New Zealand Kapanga, 1 to 1 1/4; the agent's monthly report to the end of October states that the indications for a rich discovery were first-rate, and he was expecting a change for the better at any moment. Since this report was written the only work done at the mine has been pumping, but it is stated that a remittance has now been sent out to enable the agent to resume operations, and he has been at the same time instructed to push on with all vigour.

St. John del Rey, 310 to 325; the telegrams from Morro Velho received on Wednesday, dated Rio de Janeiro, Dec. 11, gives the prices for November at 42,500 oits., of the value of 16,469l., the lode of the ore being 75 oits. per ton. Don Pedro North del Rey, 1 1/2 to 1 3/4; the telegram received on Tuesday states that the produce for November was 3100 oits.

The Bonanza Mines, on the Comstock, the Consolidated Virginia and the California, yielded in one day 1453 tons of ore—the largest quantity ever hoisted in one day out of any shaft on the Comstock—and is certainly the largest quantity ever hoisted out of any gold and silver mine on the globe. The amount of prospecting now being done on the Comstock is as great as at any period. Many of the lesser claims which were forced to shut down during the late depression in the stock market are resuming work, some of them under the most favourable auspices. In some respects the market is in a similar condition to that of the summer of 1874. At that time, as at present, there had been no important strikes for some time, and the market was just recovering from a period of unwelcome depression. The great Bonanza of the Blicher-Crown Point was still paying dividends, but rumours of a speedy exhaustion had almost the same effect as a complete collapse of the ore-body. But the fact that the mining situation had been quiescent so long, and that no important development had been uncovered for many weary months of waiting, had the effect of placing the market in a most favourable condition for a rise, when the great strike was finally announced. The sudden spurts in some of the south end mines, which the managers seem to have deemed premature, show how eagerly shares will be caught up when the signal for a grand rally is given. Even without any startling sensation, the situation differs from that of the summer of 1874 in that the leading mines were waning, while the new "bonanza" of the Consolidated Virginia had just given a herald of its grand future; but now the ringings of the lode are making a better showing than ever before, and promise to sustain the market indefinitely. The report that 400 or 500 miners have been discharged is explained by local authorities to arise from extra hands having for some time past been employed, and most of those discharged were engaged on dead work and repairs. Both mines have still abundant quantities of good ore in them, and the November produce will be the greatest ever known on the Comstock.

Rio de Janeiro, 8 1/2 to 9; this usual weekly telegram from the mines gives the week's run at \$30,000, from 1030 tons of ore, with three furnaces. During the week the refinery produced \$47,000. The latest advices state that the English Commission had finished their investigation at the mine, and started on their return to England. It is said that concerning the Richmond property they were entirely satisfied. The mine is even more valuable than they had been led to believe before leaving London, and regarding its permanency and marvellous wealth they have not a particle of doubt. The sentiment remarks that "these things go away favourably impressed, but it is nothing more than those of us familiar with the great resources of Eureka district, and the Richmond Mine in particular, had a right to expect. The mines of this section will bear inspection, and the more thorough the examination the more favourable must be the conclusion reached of its inexhaustible mineral wealth. The good words that the members of the Richmond Commission are sure to speak for us beyond the Atlantic may possibly induce other foreign capitalists to seek investment in the district." It appears that the ore now being brought down from the Richmond Company's mine is valued at \$160 to \$180 per ton, and during one 24 hours' run with three furnaces 150 tons were treated, producing 42 tons of bullion, valued at \$390 per ton. The Eureka Consolidated Company are now running four furnaces, and produce on an average 220 tons of ore per day, which yields 46 tons of bullion. For the past half of this month the furnaces have produced \$200,000, and the probabilities are that the entire yield of the month will not be less than \$400,000.

Flagstaff, 1 1/2 to 1 3/4; it seems that the meeting, on Friday last (from which the representatives of the press were excluded), was not so comparatively unanimous a character indicated by the account supplied for last week's Journal. The resolution referred to as having been passed with two dissentients was not put to the meeting at all, though the small party interested in passing it declared it carried after the Chairman had left the chair, and when the meeting had virtually broken up. The proceedings appear to have been dispirited, the language used by some of the speakers being something more than discourteous, and more than once there was good promise of a free fight. And as if this were not deplorable enough, it is now said that the contending parties may settle down peacefully together, as they have no longer a mine to dispute about, the property being already in the hands of parties whose names have

not yet figured in the Journal in connection with the Flagstaff Company, since the new proprietors hold under judgment of the Utah Courts for debts. It is not surprising, considering the anxiety of certain holders to dispose of their shares at present prices, that every effort should be made to keep the public in ignorance of the true state of affairs, but the avoidance of publicity alone should be a sufficient warning both to capitalists and speculators.

Last Chance, 3 to 3 1/2; the secretary requests us to state that highly satisfactory advices have been received from Utah respecting this company. The Emma Mine is reported to have been legally transferred to the American Mining Company. The property was bought in by Mr. Trenow W. Park on a judgment several months since, and has been re-organised under the above title, with the principal place of business in New York, General Schenck and Mr. Park retaining their interests. The mine is being developed, and continues to make regular shipments of high grade ore, which is sampled at the Pioneer Mills, and sold to the Sundry smelters. The mining interests in the Cottonwoods are described as "looming up" brighter than ever, and promises to take the lead. Mr. John McDonald, the Recorder of Little Cottonwood, is reported to have made a new and rich discovery just below the Flagstaff dump, which promises to be a second Emma. What the extent of the vein is, and the assay value of the ore, are not yet known.

Blue Tent, 3 to 3 1/2; a report from superintendent announces a further blast of 10 tons of powder had been set off with very excellent results, giving a large body of broken gravel to deal with when water was sufficient. Hultafall, 4 1/2 to 5; at the dressing-floors the outlay on capital account will be nearly completed by the end of the year, and at the mine sinking and driving has been prosecuted energetically. The end is in the bottom of the mine continues as rich as ever.

Lead Mines shares continue to find purchasers. The metal is firmer in price, and the latest advices from the United States refer to a marked improvement in the lead market there, with advancing prices; the operators are feeling more sanguine, and are making preparations for an increased business. Writing from New York, a correspondent states that the prospect gives the impression that higher rates will rule for pig lead; holders are now showing firmness, and as a consequence the market is rapidly advancing, and it would not be surprising if there should soon be much higher prices. Van, 30 to 32; the usual monthly report states that there is no change to notice in the mine. The sale on Thursday, 500 tons of lead ore and 300 tons of blends, realised 7100l. 5s.

Grozwinn, 3 1/2 to 4 1/2; everything is progressing well at the mine. Wye Valley, 2 1/2 to 3 1/2; the appearance of the bottom level is satisfactory, and it is expected that some important discoveries will shortly be made. The manager is of opinion that the rich run of ground which was productive in the 10 east will before long be intersected in the 46 east. West Wye Valley, 3 1/2 to 4 1/2; the appearance of the mine continues satisfactory, and lead is being quickly got ready for sale. Caron, 2 1/2 to 3; the new shaft from surface to the bottom has been completed, and the sinking will as soon as possible be again resumed for a deeper level. This shaft has been rapidly pushed down, it being only two months since the sinking was commenced. The lode continues to look promising, and further discoveries are expected to be made by driving the bottom level east and west. The surface works are making good progress. Red Rock, 2 to 2 1/2; the discovery in the 60 east, which was announced by telegram at the meeting last week, has since been confirmed, and is likely to prove of great value. South Cwmystwith, 3 1/2 to 4; ore is rapidly being got ready for market, and the lodes are looking as rich as ever. St. Harmon, 2 1/2 to 3 1/2; all operations are going on well, and the cross-cut towards the south lodes making excellent progress. Tankerville, 4 1/2 to 4 3/4; the bottom levels are reported to be looking better, and the additional machinery for dressing is now at work, which will materially assist the monthly returns of lead ore. Leadhills, 4 1/2 to 4 3/4; a considerable and important improvement is reported to have taken place this week in these mines.

Pateley Bridge, 4 to 4 1/2; the particulars of the annual meeting held on Thursday will be found in another column. The mine has of late greatly improved, and at the present time is making a profit of from 150l. to 200l. per month. It is considered, therefore, that the shareholders should at once carry out the recommendation of the directors and subscribe for the unissued debentures, which would enable the company to carry out the plan of operations suggested by Capt. Williams, of the Van, and by developing the eastern portion of the sett lay open a rich and lasting mine. West Pateley, 2 to 2 1/2; the manager writes that there is a splendid course of ore in the 20 east from No. 2 shaft, and that the other points are looking well.

Subjoined are the closing quotations:—Ashington, 3 1/2 to 3 3/4; Cambrian, 2 1/2 to 3; Caru Brea, 45 to 47; Court Grange, 1 to 1 1/4; Devon Great Consols, 3 to 3 1/2; Dolcoath, 34 to 36; East Caradon, 3 1/2 to 4; East Looe, 1 to 1 1/4; East Van, 3 1/2 to 4; Glenary, 3 1/2 to 4; Great Lacey, 2 1/2 to 3; Hington Down, 4 1/2 to 5; Leadhills, 4 1/2 to 4 3/4; Marke Valley, 3 1/2 to 4; Parys Mountain, 9 1/2 to 11; Pateley Bridge, 3 1/2 to 4; Penrith, 4 1/2 to 5; Roman Gravel, 7 1/2 to 8; Rookhope, 1 to 1 1/4; Tankerville, 4 1/2 to 4 3/4; Tincroft, 12 1/2 to 13 1/4; Van, 29 1/2 to 30 1/2; West Ashington, 3 1/2 to 4; West Basset, 1 to 1 1/4; West Chiverton, 13 to 15; West Pateley, 2 to 2 1/2; West Tankerville, 3 1/2 to 4; Wheel Orebor, 1 to 2; Wheel Grenville, 3 to 3 1/2; Almada and Tirlito, 3 1/2 to 4; Argentine, 2 1/2 to 3; Blue Tent, 3 to 3 1/2; Cape Copper, 33 1/2 to 34 1/2; Central Creek, 3 1/2 to 4; Chales, 3 1/2 to 4; Colorado United, 1 1/2 to 2 1/4; Condes of Chili, 2 1/2 to 3; Eberhardt and Aurora, 6 1/2 to 7 1/4; Exchequer, 4s. to 6s.; Flagstaff, 1 1/2 to 1 3/4; Frontino and Bolivia, 2 1/2 to 2 3/4; Hultafall, 4 1/2 to 5; I.X.L., 4s. to 6s.; Javali, 6s. to 8s.; Kapanga, 1 1/2 to 1 3/4; Last Chance, 3 1/2 to 4; New Quebrada, 2 1/2 to 3; Pestarena, 5s. to 7s.; Pumas Eureka, 2 1/2 to 3; Port Phillip, 3 1/2 to 4; Richmond Consolidated, 8 1/2 to 9; St. John del Rey, 315 to 325; San Pedro, 1 1/2 to 1 3/4; Sierra Buttes, 1 to 1 1/4; South Aurora, 3 1/2 to 4; Teocoma, 3 1/2 to 4; United Mines, 1 1/2 to 2; Oregon pref., 4 to 4 1/2.

COLLIERIES.—There is no change to note in the market for these shares beyond a slightly increased enquiry for some of the best of them, which, though it has not yet raised prices, has rendered them firmer. The very prolonged depression which has affected the coal markets has given little encouragement to investors in colliery shares, but there can be no doubt that those who have bought at the low prices which have prevailed for so long a time will reap the full benefit of their wisdom at no distant date. The recovery from such a state of things as we have witnessed in the coal and iron trades must of necessity be gradual, especially when many adverse influences are still at work to check improvement. The long Russo-Turkish war, with the unnecessary strict interpretation by the English Government of the neutrality laws, has been a great misfortune to coalowners, for some of the best foreign coal and iron markets have been closed to us, while our continental competitors have been reaping our profits. The home trade shows little or no change, except that in some districts house coals are slightly firmer, and will, no doubt, show a rapid upward tendency should we get any marked depression of temperature, such as may reasonably be expected at this season. It is reported that some large coal and iron works are about to be restarted in South Wales by a limited company; and as the coal is of a very superior class, and the iron produced at the works has always been noted for its excellent quality and ready saleable character, no doubt the company will attain success. Of course the present is a most favourable time for the purchase of such a property, for as the coal and iron trades improve collieries and ironworks will increase very much in value. The reports from Alltani and Llay Hall are satisfactory, the former shares closing at 4 to 5, and the latter 8 to 10. Chapel House shares are firm at 3 to 3 1/2. The colliery is doing remarkably well, and making a rate of profit such as many colliery owners would be very glad to realise when trade is good. The new shaft is just upon 350 yards deep, and will be finished in about six weeks or two months, when the present rate of output will be doubled. The prospects of the company, therefore, appear to be of a very favourable character. Cakemore closes at 2 to 2 1/2; Cardiff and Swansea, 3 1/2 to 1 1/2; New Sharlston, 3 1/2 to 4; Newport Abercra, 4 to 4 1/2; Thorp's Cawber, 2 1/2 to 2 3/4.

At the Swansea Ticketing, on Tuesday, 2250 tons of copper ore were sold, realising 9584l. 7s. 6d. The particulars of the sale were—Average standard for 9 per cent. produce, 84l. 13s. 2d.; average produce, 75-16; average price per ton, 4l. 5s.; quantity of fine copper, 164 tons 5 1/2 cwts. The following are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Perton.	Per unit.	Ore copper.
Nov. 21	2059	83 1/2	5 1/2	7 1/2	11s. 2d.	83 1/2
" 11	2216	84 1/2	5 1/2	7 1/2	11s. 2d.	83 1/2

Compared with the last sale, the advance has been in the standard 2l. 9s., and in the price per ton of ore about 3s. 6d. The Betts Cove ore gave a produce of 8 1/2, and sold at 11s. 8 1/2d. per unit; Union, produce 5 13-16, per unit 11s. 7 1/2d.; Aljstrel, produce 4 1/2, per unit 10s. 11d. There will be no sale on Christmas day.

GREAT HOLWAY.—We can refer our readers with pleasure to the report of the first meeting of this company, held on Friday week. The statements made by the Chairman (Sir S. Walcott, K.C.M.G.), and Mr. W. W. Mackerson, Q.C., were highly satisfactory, and the management seems to be in the hands of those who will pay the strictest attention to the working of the undertaking. Ample capital is forthcoming for the purposes of the mine, and there can hardly remain a doubt but that the undertaking will prove a great

success, giving employment to a large number of men in the prosecution of underground operations. The returns of lead will, it is expected, be larger, yielding sufficient to return satisfactory dividends. The directors and their friends have invested largely in the shares.

TOLGUS CONSOLS.—A full report of the meeting of shareholders, held on Wednesday, appears in another column. If the shareholders respond to the issue of shares a great success seems in store for them in the employment of the extra capital. The discovery made at the 25 is likely to turn out well, and so soon as the 40 cross-cut strikes the lode a great demand for shares may be expected.

D'ERESBY MOUNTAIN.—The Gorse lode in No. 4 adit continues rich. It is described by the agents as a magnificent lode. The lode in No. 3 adit is improving every foot driven, and as the level approaches the winze of the old workers it is apparently entering a rich course of ore. The prospects of the mine have caused a great demand for the shares, and we hear that one or two of the directors of the Van Mine have become shareholders.

PATELEY BRIDGE.—The facts elicited at the general meeting are considered to lead to the opinion that the developments recently made are of a marked and satisfactory character, indicating that a career of prosperity has been entered upon limited only by the scale upon which the operations may be extended.

ST. PATRICK.—Lead ore, it is stated, has been discovered in small quantities in sinking below the 120, which may lead to a good discovery.

* * With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: Copper Smelters—Copper Mines: Tasmania Tin Fields—No. 1. (J. Mufford); the Flagstaff Mining Company; Placer Mining in California (O. Harvey); New Quebrada Company; Tolima Mining Company; Hunter Consolidated Mining Company; the Thurst Silver Process; Trial of Rock Drilling Machinery (Le Gros, Mayne, Leaver, and Co.); Rock-Boring Machinery (T. B. Jordan); Hand Power Rock-Drill; Rock-Drills: Air-Compressing Machinery (Huthorn and Co.); Huthorn and Co.'s Patent Reliance Air Compressor; Syphon Pumping Machinery; the Nickel Monopoly; "Miners' Rights"—Mr. Alex. Macdonald, M.P. (A. Macdonald); the Discovery of Lead Ore at Rhyader (E. Harvey); Pateley Bridge Mines; Dark Proceedings: Vale of Conway Lead Mines; Wheel Grenville, and its Management: West Basset Mine (H. Wadlington); Great West Van Mining Company; Slate Quarries in Cardiganshire; Mining in Cardiganshire (G. Green); the Llanwrst Mine, and its Detractors (E. Ewan, Fisher, and Co.); Llanwrst Lead Mine (Gregory, Whitaker, and Co.); Meeting of Tolgus Consols, Van Consols, Great Holway, and General Mining Companies, &c.

ZINC ORES.

ARMAND FALLIZE, INGENIEUR-CIVIL, A LIEGE (BELGIUM), BUYER 1.—CARBONATED AND OXYDED ZINC ORES (CALAMINE, &c.) 2.—ZINC AND LEAD ORES MIXED TOGETHER, BUT DRESSABLE KINDS ONLY

CAPPER PASS AND SON, BRISTOL PURCHASERS OF LEAD ASHES, LEAD SLAGS, SULPHATE OF LEAD, HARD LEAD, BRASS SLAGS AND ASHES, COPPER REGULUS, MATTE, SCORIA, TIN ASHES, TERNE ASHES, &c., and MIXED ORES or REFUSE, containing LEAD, COPPER, TIN, or ANTIMONY.

ORE DRESSING. MR. T. CURRIE GREGORY, C.E., F.G.S., AND MINING ENGINEER, OF 4, WEST REGENT STREET, GLASGOW, AND 52, QUEEN VICTORIA STREET, LONDON, May be personally consulted in LONDON on all matters connected with Ore Dressing and Rock Drills, to which he has for years paid special attention. Estimates given, and all kinds of Machinery supplied. REPORTS AND SURVEYS OF ALL MINING PROPERTIES MADE.

Exhibition Prize Medal—New South Wales, 1877. AUSTRALIAN TIN—"KANGAROO" BRAND.

Having recently succeeded in REFINING the AUSTRALIAN TIN to the HIGHEST PITCH OF PURITY, the Undersigned is prepared to SUPPLY an article equal to the BEST REFINED ENGLISH. The uniform assay of the "Kangaroo" brand ranges from 99.70 to 99.90 pure tin. An exhaustive comparative trial of various brands of Australian tin (see annexed report) have proved the

"KANGAROO" BRAND To be superior to all other Australian tin, and equal to best refined English. COPY OF REPORT. "Sydney Galvanising Works, Sydney, Oct. 1, 1875." "DEAR SIR,—I have much pleasure in stating that I have found the tin smelted at the 'Kangaroo' Tin Smelting Works superior to any other Australian smelted tin I have used in my business up to the present time, and in no way inferior but quite equal to the celebrated 'Lamb and Flag' tin. This opinion has been arrived at after several carefully executed practical tests, as well as from metallurgical assays. I am, dear Sir, yours faithfully, S. L. BENSUSAN, Esq. (Signed) S. ZOLLNER." Messrs. JOHNSON, MATTHEY, AND CO., the well-known Assayers, report on 24th December, 1875, on a shipment ex Durham, 25 tons of "KANGAROO" TIN, 99.95 per cent. pure tin. In ordering the "Kangaroo" brand the trade will henceforth ensure uniformity of quality, excellence of texture, and absolute freedom from impurity "KANGAROO" TIN SMELTING WORKS. Sydney, September, 1877. S. L. BENSUSAN.

C. H. WALKER AND CO., MINING AGENTS AND ENGINEERS, VALPARAISO AND SAN IAGO, CHILE. GEO. G. BLACKWELL, 5, CHAPEL STREET, LIVERPOOL, PURCHASER OF MANGANESE, ARSENIC, FLUOR-SPAR, WOLFRAM, BLENDE, CALAMINE, CARBONATE AND SULPHATE OF BARYTES, ANTIMONY ORE, CHROME ORE, MAGNESITE, EMERY STONE, PUMICE STONE, OCHRES AND UMBERS, CHINA CLAY, LEAD ORE FOR POTTERS, TALC, &c.

MINERALS WANTED. ADVERTISER requires REGULAR CONSIGNMENTS of GOOD SULPHUR ORE (PYRITES), either cupreous or non-cupreous; also, GOOD BLENDE, and SOFT MANGANESE ORE. Address, "Pyrites," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

MR. HENRY SEWELL, MINING ENGINEER, PALACE HOTEL, SAN FRANCISCO, WHERE CABLES WILL REACH HIM.

DIVIDENDS, ADVANCING STOCKS, SECURE INVESTMENTS, RAILWAY SHARES, BONDS, &c.—The season is now on to make large and rapid profits from small outlay. Two or three Stocks should be bought at once with a certainty of doubling or trebling the money invested in one or two months. Particulars of HUME and Co., Crosby Hall Chambers, Bishopsgate street, London, E.C.

INVESTORS' HANDBOOK, 10s. 6d., post free. SHARES, STOCKS, AND BONDS of every description.—The Times, in the Money Article of Dec. 6th, 1877, says—"The Investors Handbook is a book of considerable value. It gives a good deal of correct information about English Railway Stocks, and also in regard to Mining Operations, as well as on investments generally. . . . It is worth reading." Published by CHARLES THOMAS, F.S.A., F.G.S., 3, Great St. Helen's, London.

Notices to Correspondents.

SWANSEA TICKETINGS.—“J. F. K.” (Water-lane).—The usual course is to consign the ore to one of the copper wharves at Swansea—Messrs. Henry Bath and Son, for example—with necessary directions, &c., to sell. The ore will then be sampled in the ordinary way, and come into the Ticketing about three weeks later. No smelter would buy at the ticketings upon samples taken in Germany by the seller.

LLANRWST AND ABERDAUNANT MINES.—We have received numerous letters during the week respecting the different statements which have appeared in various circulars. We always endeavour to avoid personal controversies; letters with names and addresses appended may be published, but anonymous letters will not be noticed.

METAL QUOTATION.—“C. W.” (Wolverhampton).—The quotation 53d. for yellow metal sheeting on Nov. 3 was, no doubt, a typographical error for 63d.; but it is difficult to trace the matter so long afterwards. Such enquiries can only be satisfactorily answered when made at the time.

Receives.—“Empresario” (Dec. 8).—“P. E. G.” (New York).—“E. B.” wishes for information respecting West Maria and Porteus—“Constant Reader” (New York). We will endeavour to get particulars—“Subscriber.” Our reporter attended the meeting of the North America Gold Mining Company, but was not allowed to take notes of the proceedings—“J. S.” (Luton) had better consult a broker as to the course he should pursue. We presume he can act as he states his desire of doing—“Observer” (Parys Mountain).—“Reader” (Penrith).—“Shareholder” (Don Pedro).—“M. A.”—“Constant Reader” (Paris).—Yes—“Chemist” (Manchester). We have not been able to obtain the information; we may, however, do so in time for next week’s Journal—“W. E.” A letter was addressed to Mr. John Rogers, in answer to enquiries, with the information desired, but it has been returned from the Post Office as “not known” at the address given—Mr. Palmer on the Chontales Mining Company shall appear in next week’s Journal; as also Mr. Vassard on the Electric Light—“J. M.” (Sticker).

THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, DECEMBER 15, 1877.

COLLIERY EXPLOSIONS.

In a recent Journal we published some correspondence between Lord KINNAIRD and Mr. MACDONALD, M.P., with respect to the Blantyre explosion, and the means that should be adopted to prevent the occurrence of such catastrophes in the future. From the general tenor of the letters it is evident that an effort will be made in the ensuing session of Parliament to make some addition to the Act of 1872 for what is stated to be the safer working of mines. The motives of Lord KINNAIRD and the Member for Stafford are no doubt good, for they desire what all persons connected with mines are anxious to see accomplished—complete freedom from explosions. But, as we have pointed out frequently, the entire immunity from explosions in our collieries is simply an impossibility; and this opinion is fully borne out by mining engineers, colliery managers, and, indeed, by all persons who have any knowledge of coal mines, and the insidious character of the gases found in them. Our colliery owners naturally do all they can, as a rule, to ensure the safety of their workpeople, for in so doing they are looking after their own property, and they complain of the frequent attempts that are made by some of our legislators to alter the system of working our collieries by certain rules and methods that cannot be carried out without entailing great inconvenience and serious loss, without any real advantage. Those persons, however, who are desirous of seeing certain of their own ideas carried out are not practical men, and know but little about coal mines, though they presume to be far in advance of our ablest mining engineers, and are always prepared with a specific for preventing accidents from all causes in our collieries. The knowledge of our best men has been exhausted in finding the readiest way to avert possible accidents, and it is not to be supposed that ordinary outsiders who know little or nothing about the getting of coal can do more than they have done, with their long and varied experience.

Lord KINNAIRD, who takes such a deep interest in the working miners, and whose desire to benefit them no one who knows him will question for a moment, is certainly not a mining expert, neither is Mr. MACDONALD, yet they have a remedy prepared in the shape of an addition to the present Act of Parliament, by which explosions are to be numbered amongst things of the past. But explosions take place for which our ablest men are unable to account, and for which, consequently, there can be no preventive measures specially prepared before hand. Of this there is plenty of proof, for not only in England, but on the Continent, eminent scientific gentlemen have carefully collated the explosions which have taken place in coal mines, with the condition of the barometrical pressure. In England, Mr. SCOTT, the director of the Meteorological Office, and Mr. GALLOWAY, one of the Inspectors of Mines, have paid a great deal of attention to the subject, and in some interesting diagrams prepared by them, showing the readings of the barometer and thermometer in 1872, at Stonyhurst, they say—“We have on the diagram 233 explosions, 70 per cent. fatal, of which we consider 135, or 58 per cent., to be due to disturbances of atmospheric pressure; 39, or 16 per cent., to be attributable to excessive heat of the weather; and 59, or 25 per cent., to be without a sufficient explanation on meteorological grounds.” The remedy proposed for preventing explosions from these varied causes appears to be what is known as the fire-damp indicator of Mr. ANSELL, of which both Lord KINNAIRD and Mr. MACDONALD have a very high opinion. It is, however, an opinion not shared in by our scientific and practical mining engineers, who ridicule the idea of the instrument being of the slightest use in a colliery, and the views recently given with respect to it in the Journal by Mr. BROWN, of Hedsor, are those entertained by the profession generally. Had it been of any use whatever it would long since have been found in our mines.

With regard to the provisions proposed by Lord KINNAIRD to be added to the present Act in the ensuing session of Parliament there are some that we agree with, whilst there are others that could not be carried out. Very few of our colliery owners we should say would object to the adoption of detaching hooks for cages and kibbles, and we are decidedly of opinion that no blasting or naked lights should be allowed in fiery mines. On the other hand, we do not see the necessity of firemen being examined by a Government Inspector, and having a certificate of competency before being employed. A knowledge of gas and how to detect it is not a very difficult matter, but that will not make a careless man do his duty efficiently, even had he two or three certificates. What is required is steady men on whom reliance can be placed, and those the manager of a colliery can find better than anyone else, for he is in a great measure responsible for them. As to a report of the state of the machinery, and ventilation of the workings of the mine, to be made daily, and entered in a book to be open to the Government Inspector and the men, that appears to us to be already in force, for in the Second General Rule in the existing Act it is provided that in all mines in which inflammable gas has been found within the preceding twelve months once in every 24 hours if one shift of workmen is employed, and once in every 12 hours if two shifts are employed, a competent person or persons shall before the time for commencing work inspect with a safety-lamp the working places and report the result without delay in a book kept at the mine for the purpose. It is also provided that in every mine where no inflammable gas has been found during the preceding twelve months the working places shall be examined once in every 24 hours, and the report written in a book. This we think is sufficient for all ordinary purposes, for the report can always be seen, whilst the men have the power of appointing some of their own body to examine the mine.

Another alteration proposed is with respect to Government Inspectors. Lord KINNAIRD reiterates the statement that the present plan of inspection is a farce, and we suppose considers that Inspectors should go into all the mines in the district and see that the modes of working and ventilation were properly and efficiently carried out. As there are rather more than 4300 mines in the kingdom there would have to be a very great increase in the number of Inspectors, and they would take from the colliery owners and managers a great deal of the responsibility which we think justly

attaches to them at the present time. In fact, to carry out such a proviso the Act of 1872 would have to be re-cast, without any advantage in the way of increased safety to the workmen. Accidents frequently take place which could not be averted by any amount of inspection. Outbursts of gas take place, often where least expected, not only from the coal, but from the floors of the mine as well, and in the latter case with a suddenness and force that nothing could prevent, and all that can be done is to have the ventilation active and the best of safety-lamps.

The last proposal of Lord KINNAIRD is “That all damages for loss of life or injury to person caused by neglect or non-observance of the Act be borne by the owners or lessees of the mine.” Were this carried out, very few persons, we fancy, would care to become colliery owners, for they would have to pay a very heavy penalty for any act of negligence or carelessness on the part of a workman by which any of his fellows should be killed or injured. It is an impossibility for any employer of miners to see that the latter do not commit a wrongful act, unless they employed one man to watch another whilst at work. An owner employs as good a manager as he can get, provides all the necessary means for working a colliery on the best and safest principle, and having done that his duty ends. But it frequently happens that a workman by his recklessness not only loses his own life but is the cause of the deaths of many more, yet it is proposed that the employer shall be held accountable for such an act, and be compelled to maintain the family of the man who had done all the evil. Besides that, it not unfrequently happens that an explosion will cost a colliery proprietor some 15,000l. to 20,000l., yet he cannot recover a shilling of that, although the loss may have been occasioned by a direct breach of the rules, even where the discipline is as strict as it can possibly be. The last Act of Parliament has been a costly one for the owners of coal mines, and to some extent it has been shared by the public by the increased price of coal, and we have no wish to see by means of another Act the cost of working made heavier than it now is. The owners of mines have plenty to do to sell their coal at a price that leaves them scarcely any profit, not even ordinary percentage on the capital invested, and there is no reason why they, more than any other class of capitalists, should be subjected to one-sided, unnecessary, and vexatious legislation.

OUR EXPORTS OF IRON AND COAL.

The Board of Trade Returns issued for November and the eleven months of the year are far from satisfactory, so far at least as the two important industries—iron and coal—are concerned. In both there has not only a falling off in the quantity exported, but a considerable decline in their value. In November, 1876, we are credited with having sent out of the country 189,173 tons of wrought and unwrought iron of the value of 1,735,706l., whilst for the same month of the present year the exports had fallen to 184,748 tons of the value of 1,633,607l. Of machinery and mill work last month contrasts most favourably with November, 1876, the values being respectively 592,451l. and 562,395l. But when we come to take the eleven months there is a marked change in the opposite direction, for the value in the present year so far was 6,146,692l., against 6,706,114l. for the same months of 1876. In hardware and cutlery there has also been a decline up to the end of November as compared with last year, the values being 3,055,700l., as compared with 3,216,068l. Our exports of coal show a considerable decrease for the present year to several countries where English coal has been hitherto largely consumed. In one or two instances the war in the East may have been the material cause, although we are not aware that there has been any effective blockade by which coal could not reach the ports of either of the belligerents. The Baltic has been entirely free and open to a much later period than in former years. Russia, however, last month only took from us 12,710 tons, against 51,569 tons in November, 1876. For the eleven months of 1876 the quantity sent to that country was 1,165,691 tons, whilst for the last eleven months it was only 1,032,301 tons.

It is said by some of those gentlemen who are in favour of reducing our production of iron and coal so as to enhance their value that it is not in England alone that trade is in a depressed state, for it extends throughout the entire Continent, but this does not appear to be the case with Germany, who for many years has been one of our best customers for coal. In the course of the last eleven months our exports of coal to the country were 1,919,887 tons, whilst for the corresponding period of 1876 they were 2,163,448 tons. But the fact is Germany is rapidly developing her own normal wealth, which of late years with respect to coal has been far greater than in this country, and in all probability not many years will elapse before she is entirely independent of us. France also shows a decline from 2,970,688 tons in 1876 to 2,753,841 tons for the same months of this year. Our total exports of coal from January to the end of November, 1876, were 15,144,609 tons, and for the same period of 1877 14,311,687 tons, a decrease to the extent of 832,922 tons. But we are told that if less is sent out of the country the more valuable will what is raised become, so that masters will make larger profits and men obtain higher wages. This is a view that we certainly cannot endorse, for if we do not export coal extensively it will be all the better for other countries that are now successfully competing with us, and will be delighted to find that the action of the British workmen has driven English coal out of several markets, and left them open to others. German coal has been found alike adapted for steam and almost every other purpose, and is sold at a price which gives our own colliery owners in competition with them scarcely a cent. of profit. But they sell in the expectation of things improving, and to retain a hold of the markets they have long been connected with. That their profits are really trifling, we have only to see what their charges are. In the eleven months of the present year the average value of the coal exported was 10s. 2½d. per ton, and for the same period of last year it was 11s. per ton. In November, 1876, the price was 10s. 6½d., and last month it was 10s. per ton. That it is to the advantage of all persons connected with mines that our exports of coal should be maintained and extended does not admit of any doubt, for when they sensibly decrease—as some persons wish them to do—it will be a serious matter for the working miners of this country, for it would be the means of bringing the price of coal down to a very low point indeed so far from increasing its value.

OUR RAILWAY IRON ABROAD.

On various occasions we have called attention to the progress and increasing importance of the Australasian demand for our railway iron, and the statistics which are now nearly complete for 1877 abundantly confirm all that we have published upon the subject. The exports of railway iron made by us to the Australasian group of colonies place our Antipodean dependencies in the third rank, in fact, among our external customers for railway iron. In November the Australasian colonies occupied, indeed, the foremost place, having taken 8908 tons of our railway material in that month, as compared with 3230 tons in November, 1876, and 6548 tons in November, 1875. The largest consumer of our railway iron beyond the seas has been British India, the comparative activity with which the Anglo-Indian Government is proceeding with the construction of State railways, and the prosperity of the great guaranteed Indian networks, having made their influence unmistakably apparent in this year’s returns. Thus in the 11 months ending November 30 this year British India took our railway iron to the very substantial extent of 89,547 tons, as compared with 50,875 tons in the corresponding period of 1876, and 33,282 tons in the corresponding period of 1875. The figures for November this year are extremely encouraging as regards our exports of railway material to our Indian possessions, the deliveries for that month having been 8887 tons, against 3760 tons in November, 1876, and 1602 tons in November, 1875.

Notwithstanding that Russia has had to sustain the strain of a great war with Turkey, the Russian demand for our rails and accessories has been pretty good this year. Thus Russia took from us in the eleven months ending Nov. 30 this year 79,986 tons of our railway material the corresponding consumption in the corresponding period of 1876 having been 80,085 tons, and in the corresponding period of 1875 109,781 tons. In November our deliveries of rail-

way iron to Russia were also still proceeding upon a considerable scale, having amounted in that month to 8105 tons, against 9084 tons in November, 1876, and 7607 tons in November, 1875. The lively dull and restricted this year, having amounted to Nov. 30 to only 36,001 tons, as compared with 59,833 tons in the corresponding period of 1876, and 84,750 tons in the corresponding period of 1875. The weakness of Canadian railway credit—a weakness which can excite no astonishment when it is remembered that there is scarcely a single Canadian railway which gives its stockholders any severity upon the statistics of this year, and there does not appear to be much prospect at present of any increase being witnessed at present in the consumption of our railway material in British America.

The figures available with respect to the consumption of our railway iron in the United States are of a most melancholy and depressing character. It is true that there has been a slight—very slight—revival in the American consumption of our railway material this year, but still this consumption is but the shadow of its former self. In 1871 we sent the United States 512,277 tons of railway iron; the frightful falling off in the American demand which has occurred in the course of the last six years is painfully illustrated in the fact that we only exported 2516 tons in the same direction in the first eleven months of 1877. It is true that in the corresponding period of 1876 the corresponding exports were only 349 tons, but still we repeat that our commerce with the United States in the matter of railway iron is but the shadow of its former self. It is at the same time satisfactory to note that the improvement which has taken place this year in the colonial demand for our railway material has rather sensibly helped up this year’s figures, our aggregate shipments of railway material in all directions to November 30 this year having amounted to 456,057 tons, as compared with 388,670 tons in the corresponding period of 1876, and 521,833 tons in the corresponding period of 1875. It is not at all equally satisfactory to observe that while the 388,670 tons of railway iron exported in the first eleven months of 1876 were valued at 3,486,071l., the corresponding value of the 456,057 tons exported in the first eleven months of 1877 did not exceed 3,562,113l.

NATIONAL ASSOCIATION OF CERTIFICATED COLLIERY MANAGERS.—In accordance with the arrangements which have been made for holding a series of meetings in the principal colliery districts of England, on Saturday a meeting in connection with the association was held at Wigan, when the objects of the association were explained and discussed, and a deputation was appointed to attend the next meeting, which will be held at Birmingham.

NORTH AND EAST LANCASHIRE MINING DISTRICT EXAMINATIONS.—The Board of Examiners for the Mining District of North and East Lancashire met on Thursday at the Masonic Hall, Manchester. Mr. John Knowles presided; and there were also present as examiners Mr. John Waddington, of the Hargreaves Collieries, Burnley; Mr. John Ridyard, of the Bridgewater Collieries; Mr. Herbert Fletcher, of the Ladyshaw Collieries, near Bolton; and Mr. Joseph Dickinson, Chief Inspector of Mines, *ex officio*. Seventy-one persons had intimated their desire to be examined with a view to employment as certificated managers of collieries. The examination papers comprise a series of questions regarding the provisions of the Mines Regulation Act, also questions upon Atkinson’s Treatise on Ventilation and the Friction of Airways, and on Practical Mining; but there is, in addition to the written examination, a *visu voce* examination on the above and other subjects which it is necessary a colliery manager should be acquainted with. The examination is expected to last three days. Before proceeding with the business the board inspected the preparations which had been made by the secretary for conducting the examinations, and passed a resolution approving of them. A further resolution was passed expressive of regret at the recent death of a member of the board—Mr. Thomas Gregson, of Bolton—who was on the board in the capacity of a person “employed in and about a mine”—representing, that is to say, the interests of the working colliers. We understand that colliers in the district are invited to nominate for the vacant post any person whom they consider most suitable, and to forward the nomination to Mr. Dickinson. It will be by him communicated to the Home Secretary, with whom the appointment rests.

IMPROVED SAFETY-LAMP.—Some trials have just been made at Glasgow with the “Protector Safety-Lamp,” which has the advantage that the top of it cannot be removed without extinguishing the light. The light-yielding matter in the reservoir (a mineral product named colzoline) is warranted to last 12 hours without the necessity of re-trimming. The colzoline gives a light 30 per cent. brighter than that of oil. From the nature of the light-yielding matter, and the small amount of soot thrown off by the flame, the gauze is not liable to get clogged with oil and soot.

COAL AND IRON IN THE UNITED STATES.—The market has been quiet but steady for steel rails at Philadelphia; no sales of any special importance have been noted. The mills are pretty well supplied with orders at present, and are accordingly not pushing for business, and buyers are equally disinclined to do business at any advance. Negotiations are pending for about 25,000 tons at \$42 per ton, delivered at tide. These negotiations are expected to be carried through in a few days. No change in the general condition of the trade is likely to occur at present. There are a good many inquiries for iron rails at Philadelphia, but no orders of importance have actually been placed. A good many small lots have, however, been sold. There has been little or no improvement in sheet-iron at Philadelphia, and the demand has continued uncertain and unsatisfactory. There is an absence of animation in the inquiry for plate and tank iron at Philadelphia, and the market has ruled dull and heavy. There is a fair demand for steel at Pittsburgh, Pennsylvania, and the local manufacturers expect to have as much work as they can get through until the close of the year. The aggregate production of anthracite and bituminous coal in Pennsylvania to Nov. 17 this year amounted to 20,933,820 tons, against 19,710,237 tons in the corresponding period of 1876, showing an increase of 1,223,583 tons this year. The movement of coal and coke over the Pennsylvania Railroad to November 7 of this year amounted to 4,070,588 tons. Of this total 3,206,655 tons were coal.

LUBRICATORS.—Messrs. HUNT and MITTON, of Birmingham, adopt the ordinary metallic receptacle used for containing the lubricating liquid or compound of any desired shape or pattern, to the upper portion of which they arrange the lid or cover, and secured by means of the screw or any other suitable manner; and in this lid or cover they construct a circular plug, the upper portion passing through the said lid and working freely in either direction; the lower part of the said plug is tapered, and when the lid is applied to the receptacle the plug finds a corresponding bearing upon the edge of the said receptacle and is perfectly secure and sound. The advantage aimed at by this invention is the adopting of the tapered plug secured by the screw, being continuous in its wear, preventing a leakage, and economical. Hitherto a joint has been made of any soft metal by forcing the lid or cover therein by screwing or keying, or in other cases the ordinary steam packing has been employed, but leakage always follows.

MAGNETIC NICKEL.—The magnetic properties of pure nickel have been lately investigated by M. Wild, of St. Petersburg, who procured a nickel magnet in the form of a flat pointed bar, made by Wharton, in Philadelphia. The results are—1. Pure nickel takes a comparatively weak magnetism; but the maximum of this is only half to a third of the permanent magnetism which may be acquired by hard steel. 2. The magnetism remaining in nickel after cessation of the magnetising force is less permanent than in well hardened steel; the gradual loss of magnetism in course of time, both in warming and cooling, is in nickel greater than in hard steel, even when by repeated heating and cooling it has, like steel, been brought to a certain state of permanent magnetism. 3. The temperature coefficient of nickel magnets in the latter state is less than that of well-hardened steel. 4. The temporary magnetism which pure nickel acquires is about double its permanent magnetic moment, half of the temporary

magnetism which hard steel can acquire, and a fourth of that which soft iron can acquire. In its magnetic behaviour nickel is thus throughout subordinate to steel and iron.—*Scientific American.*

REPORT FROM CORNWALL.

Dec. 13.—Matters are very dull here now, so far as actual business is concerned, though even to this there are some exceptions, and the Christmas fat stock shows with their accompanying dinners, which are being held in every part of the county, are one of the chief subjects of interest. The fall of Plevna, pointing, as it may be presumed, to a speedy termination of the war, appears to give ground for a rapid improvement in prices in the new year. It is to be hoped most fervently this may be so, for the sake of all who are interested. Meanwhile, we cannot expect any definite change for the next two or three weeks. Christmas is a notable disturber of business.

The heavy rains, of which we have had so much lately, though during the past few days there has been some improvement, are now telling, as we predicted must be the case ere long, seriously on the pumping power of our mines. A great deal more attention is, however, now paid to pitwork than used formerly to be the case, and these extra times of pressure are, therefore, better provided against. Owing to the general wet seasons we have had of late the ground is so fully charged with accumulated water that a moderate rainfall now has much the same effect as a heavy rainfall under ordinary circumstances.

An excellent lecture on the "Properties of Tin" has been delivered by Dr. R. Oxland, F.C.S., at the Plymouth Institution. After referring to its mineralogical character and geological relationships, Dr. Oxland described the manner in which the ore was obtained. First there was streaming, which was the working over and washing the alluvial deposits of old river beds, or of china-clay formations, in such a manner as to remove the lighter earthy materials from the heavy "stream tin," which was mostly found in the form of pebbles, gravel, and sand, sometimes of crystalline nature, but more commonly amorphous. Until a comparatively recent period so much superior was the metal obtained from stream tin to that produced by mining, that it was almost impossible to make tinners believe that there were two sorts of metallic tin—"stream tin" and "mine tin." This had now been proved to be a popular error by the production, through superior treatment, of as nearly pure metal from stream tin ore as from mine tin ore. Mining proper for tin might be seen in many places in Cornwall, but notably at Dolcoath, Carn Brea, Tincroft, and East Pool Mines. The operations of hauling to surface with the steel-wire rope, the delivery to the dressing floors for breaking, picking over, and sorting into copper and tin ores, of crushing the copper ore, and preparing it for market, and the delivery of the tin ore from the mine to the tin-dressing floors were spoken of at length, and the methods of separating the pure black tin from its associated minerals were described as consisting of stamping and submitting the pulverised mineral to a long series of washing operations, by which all the lighter earthy minerals were separated, and the tin left associated with only metallic minerals, commonly iron and arsenical pyrites, but sometimes copper, wolfram, &c. These were separated by driving off the sulphur and arsenic by exposure to heat in suitable furnaces. The sulphur converted into sulphurous acid was washed, passing off into and contaminating the atmosphere, but the arsenic, by absorbing oxygen, was converted into arsenious acid, condensed in chambers, thence removed for sale. The iron remaining lightened by combination with oxygen was easily washed off, the upper if any wasted—and, finally, the clean black tin was left with little else. If there was an admixture of wolfram it had to undergo another calcination with soda, whereby tungstate of soda was obtained and easily removed by solution in water—and, finally, if the operations had been properly conducted pure black tin was obtained. This was sold by the miner to the smelter, who had but easy work to do if the dressing operations had been properly conducted, for he had to take away about a quarter part of the weight of the ore existing in the form of oxygen, and so convert the black tin, which was really of many different colours, more commonly brown or red, in the form mostly of gravel or powder, into "white tin." The metal being very heavy—more than seven times the weight of water—was much sought after by wool shippers in Australia as ballast for their ships, and so valuable was it for this purpose that it commonly reached London at about or even less cost than was incurred for carriage from Cornwall to London.

Among the illustrations of the uses of tin in the arts and manufactures adduced were the rich scarlet cloth in which tin is used as a mordant, the humble pin and tin-tack, bronzes, Britannia metal, and electro-plated tea-pots, block tin dish covers, pewter plates, cups, and dishes, and many of the more recent applications in the shape of boxes and cases, both ornamental and useful, that now came under notice for the conveyance from the most remote parts of the world of preparations of fruits, vegetables, meats, game, fish, milk, biscuits, cakes, &c. In conclusion, attention was directed to the fact that the skill of the Cornish tinner and miner transplanted to Australia and California had contributed very largely to the successful developments of the wonderful resources of those distant countries in gold and silver, which in less than 30 years had developed a commerce which, although as yet quite in its infancy, had already altered, and greatly ameliorated, the relationships of every nation on the face of the globe. The present depression of the mining interests of the Western Counties was considered, especially in reference to the question of improvement through promotion of increase of consumption of tin. This was advocated rather by improvement in the condition of the working classes by raising their standard of living, and so increasing consumption, than by attempting to obtain an increased demand for the metal by decreasing the cost through reduction of wages. Improvements in production were recommended through the adoption in tin mining of the Blake's Crusher, of improved stamps, of the drill, of the steel wire-rope, and of improved engines, the value of which had been so fully tested and proved efficacious in the foreign competing mines. With these aids, and by the diligent application of the scientific principles involved in the numerous operations required to produce white metal from black tin, the lecturer encouraged a lively hope for a bright future in the mining history of the two counties. In reply to an enquiry, Mr. Oxland said that small quantities of tin were imported from Australia before the smelting operations were introduced there, but now the quantities were much larger. A great deal of it found its way to San Francisco. He believed that tin was also found in Australia in connection with granite formation, but the expenses of working for it in that country was so great that it would be a long time before Australia could carry on mining operations successfully.

TRADE OF THE TYNE AND WEAR.

Dec. 12.—A good business continues to be done at the shipping places on these rivers in gas coal. The House Coal Trade is comparatively inactive, owing to the mildness of the season. The demand for manufacturing coal and small coal is poor, at low prices—for puddling 5s. per ton, and for small 3s. per ton is realised. These prices contrast strangely with those paid during the coal famine in January, 1873, when the average price of coal in Durham was 15s. 10d. per ton; in April, 1874, it was 12s. 8d.; and at the present time it is 5s. 3d. In 1873 coke rose to 45s. per ton; at the present time best coke brings 11s., and the demand for coke continues fair. The total exports, foreign and coastwise, from the North Eastern ports during November were 1,010,185 tons, against 1,019,393 tons in the same month of 1876, so that the falling off is not very great. In Durham the collieries are in a much better position, so far as employment is concerned, than in Northumberland, as a great variety of coal is produced, and the works are, some of them, kept going regularly, while others are engaged about three-fourths time. The prospect, however, at present is far from cheering, as it is likely that a number of furnaces will be blown out shortly, and this will still further reduce the demand for manufacturing coal. Unless a revival of trade occurs more collieries will no doubt be closed before the trade can be got into a healthy state. There was some excitement in Newcastle on Tuesday on the arrival of the news respecting the fall of Plevna, as this may lead to the

speedy stoppage of the war. There is a great trade between the Tyne and the East, and the business in railway material has been much checked by the disastrous war.

The Steam Coal Trade in Northumberland is extremely bad, this coal having to a great extent been driven out of the market by Scotland, the Midland, and other districts, at lower rates than can be accepted here. In Scotland hard steam coals are now shipped at 7s. 6d. per ton, the men's wages there being 3s. 6d. per day. The exceptional prosperity in the steam coal trade from 1871 up to 1874 has caused great mischief, as the men during that period raised the wages to a very high point, and also reduced the working hours, and the only chance the masters have at present is to reduce the cost of raising, so as to enable them to compete with other districts. The notice given lately for a reduction of 12½ per cent. on coal hewers' rates, and other wages in proportion, has been done with a view to effect this, but the men have not as yet accepted this reduction, and they propose to submit the question to arbitration, but this course the masters object to very strongly. It is quite possible that this may result in a stop, so far as the associated collieries are concerned, but a considerable number of works will still be worked in the county. It is, however, within the range of possibility that a compromise might be effected at the eleventh hour. There is no doubt that the men would gladly accept a compromise if the masters would concede any part of the proposed reduction.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Dec. 13.—The demand for furnace coal does not increase. Indeed it is not so marked as it was some few weeks ago, and prospects are decidedly adverse. In a very short time less furnace coal than is now wanted will be going into consumption, for the number of furnaces blowing is to be decreased. Prices remain upon the basis of 9s. per ton. Forge coal cannot be reported as in improved enquiry. Domestic fuel is not selling with average alacrity, still this branch might be much worse off than it is. Speaking of the industry as a whole, it must be reported that many collieries are idle, that those working are making short time, and that large numbers of miners are unemployed.

Colliery owners are anxiously awaiting the issue of the draft of the proposed new Mines Drainage Bill. They declare that the Act will meet with much opposition, especially if, as is intimated will be the case, it is proposed to include the Oldbury district again within the area. Disatisfaction is expressed that up to the present the Bilston owners have not been informed whether the petition which they have presented for the cutting off of that district from the operations of the Commission is possessed of the requisite signatures.

A provisional arrangement has been concluded between the directors of the Horseley Company (Limited) and Mr. P. D. Bennett, of the Spon-lane Works, Birmingham, for the amalgamation of their respective businesses on Jan. 1 next. The arrangement involves the purchase by the Horseley Company of the business of Mr. Bennett, who will assume the managing directorship and the chairmanship of the united concerns.

The Pig Iron Trade is dull. The output is in excess of consumption, and preparations are in hand for decreasing production. Two furnaces in Dudley are shortly to be blown out. One is situated at Park Head, and belongs to Messrs. Phillips and McEwen, and the other at Corby's Hall, and is owned by Wm. Matthews and Co. (Limited). When these furnaces are out about 4½ will be the number blowing. In prosperous times as many as 90 would be in blast. The altered state of things is very evident from the fact that iron masters who can look back no more than 20 years can recollect when no fewer than 130 furnaces were on in South Staffordshire and East Worcestershire: 4½ for all mine, and 2½ 5s. for cinder qualities are the open market quotations. The finished iron trade is without conspicuous change. That a certain portion of the Shrubbery and Swan Garden Fin-hed Ironworks in Wolverhampton, owned by Messrs. G. B. Thorneycroft and Co., will in all probability be kept on after Christmas is highly gratifying. A new company are negotiating for the concern, and 45,000l. is the purchase-money. The property in ordinary times would fetch, perhaps, four times this amount. It is rumoured that the Midland Railway Company are the purchasers.

The well-known tube making firm of Whitehouse and Co. (Limited), Wednesbury, have gone into liquidation, with unsecured debts about 2500l. John Thomas Royce, of the Phoenix Tube Works, Tipton, has also suspended, with liabilities estimated at 1500l.

Dulness rules on the Stock Exchange, and transactions are becoming fewer as the year closes. Messrs. John Bagnall and Co.'s shares have been bought at 3½ 5s., but this has been the only business during the week in coal or iron properties. Sellers are offering the 8½ shares of the Darlaston Coal and Iron Company at 7½ 15s. discount, but without success. The 15½ shares of the Pelsall Coal and Iron Company might be had for 6½. Holders of the original shares of the Sandwell Park Company quote 8½ premium, and for the new shares 7½ premium. For the present, however, buyers hold back. The Wallsall Wood Colliery's property could be had for 2½ dis. The property of the Patent Nut and Bolt Company has changed hands at 6½ premium.

In North Staffordshire the mills and forges have enough orders to keep running at the present rate until the end of the year, but no improvement is expected yet awhile. Plates are quoted 9½ 5s.; crown bars, 7½ 5s.; best, 7½ 15s., with 10s. extra for delivery in London. The pig-iron trade is very depressed. More coal is being mined than can be consumed.

A curious case under the Mines Regulation Act has been heard at Sedgley Police Court, Mr. J. P. Baker, the Government Inspector, laying informations against the officers of the Tipton Moat Colliery. In a shaft not used for drawing men, two men who were repairing the shaft were killed by being thrown to the bottom through the brake not acting, and the information was laid for infraction of rules in having inadequate brake, no indicator, and so on. It was urged in defence that the indicator was not used because men never went up and down the shaft, and the Bench could not see sufficient evidence to convict, also giving the defendant the benefit of the doubt as to the insufficiency of the indicator had it been used. Case dismissed. Messrs. J. Shepherd, the competent person; Jackson, of Leeds, late engineer; and G. Price, the engine-tenter, were each fined 5s. and costs for infraction of rules.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Dec. 12.—The Coal Trade is said to be slightly better, but both in the Mold district and that of South Shropshire, as well as in the forest of Wyre, there is a breaking up of some of the smaller enterprises started in 1872-3. This was to be expected, some of these were opened where they were never likely to pay—in networks of faults in the thin seams above the millstone grit, in the grit itself, and in the thin uncertain seams that lie at the top of the coal measures. Pig-iron has declined 1s. to 1s. 3d. per ton on the prices of last month. The Plas-kynaston Colliery Company have very properly prosecuted one of their colliers who surreptitiously fired a shot in workings where this was forbidden. The magistrates fined the man 1l. and 7s. costs. Mr. John Pryor, of Mold, died suddenly last week. Mr. Pryor had been connected with the Llanarmon and other mines of the district for years. He was also a partner in the Alltarn Colliery, near Mold. He took a great interest in mining enterprise generally, and his name often appeared in the Journal.

Considerable interest is being excited by the proposal of a gigantic scheme to supply the town of Liverpool with water from one of the upper streams of the River Vyrniew, a tributary of the S-vern. It is proposed to dam up the valley of Llanwddyn, about 10 miles south-east of Bala Lake, in the midst of the Berwyn Mountains. A lake would be formed 4½ miles long and 1½ mile wide, and about 400 ft. deep. The water is said to be of excellent quality, the supply abundant, the ground favourable for engineering works, and the valley remote and comparatively unfrequented. It is argued that although the church and village will have to be removed, the objections applicable to the Manchester Thirlmere scheme in spoiling a place of public resort cannot be urged against this. The conser-

vators of the fisheries of the Severn fear, however, that there will not be enough water left in the river for the salmon, and the Shrewsbury Chronicle anticipates that if the scheme is carried out the Severn will be "nothing less than a foetid sewer." Possibly both fears are unfounded. With a little engineering skill the surplus water which sometimes half drowns Shrewsbury may be made available for a more equable flow.

Powers are asked for an extension of the Bishops Castle Railway to Montgomery Station, on the Cambrian line. This would place the mines of Montgomery and Cardigan in more direct communication with the Midland towns and the South. A much needed bit of railway is one from Minsterley, in the midst of the Shropshire Mines, to Montgomery Station, passing by the barytes mines of Wotherton. This mineral is now taken to that station by traction engines, and as a consequence the roads are in a bad state. It is authoritatively said that the cost of the repairs of four miles of road from Porthwaen to Penybont, traversed by traction-engines from Llangynog, has this year cost the commissioners 1400l. above the ordinary sum.

A meeting was held on Friday of the land and quarry owners of the Glyn Valley for the purpose of considering the proposed extension of the tramway up the valley, and the substitution of steam for horse power. The meeting unanimously approved of the scheme as far as it goes, but strong remonstrances were made against the present high rates charged by the Shropshire Union Canal Company, who work the line. On slates these rates amount to 6d. per ton per mile. The opinion was also freely expressed that the increasing traffic of the Valley required a junction with the Great Western Railway, the opinion expressed in my report of Nov. 24.

A lock-out of about 80 slate quarrymen took place at Coed Madoc Quarry, Nantlle, on Friday. Some time since a workman who threatened the manager, and had been convicted before a magistrate, was discharged in consequence. A deputation from the Quarrymen's Union wished for an explanation. This, Mr. Roberts, the lessee of the quarry, refused to give, not recognising the right of the Union to interfere in the management of the quarry. He also threatened to discharge the workmen who had ceased working if they did not return in a given time. Considerable excitement prevailed, and the cessation of work became general. On Saturday, however, the men asked leave to return to work, which was refused. If I may offer an opinion this refusal was a mistake. It is necessary for employers to assert their rights in these days, but this is best done by avoiding all show of intolerance or high-handed authority.

REPORT FROM THE NORTH OF ENGLAND.

Dec. 13.—Without doubt the present position of affairs in the North of England Iron Trade is such as to call for much anxiety and alarm. Week succeeds to week, and month to month, without in the least degree diminishing the dangers and difficulties in which the staple industry of Cleveland is enveloped; but, on the contrary, there is every prospect of a long continuance of the depression that now makes the wealthiest feel the pinch, and drives all others to the wall. It is now on the cards to blow out a number of blast-furnaces with the view of bringing the demand more nearly abreast of the supply. This project will be discussed at a meeting of the Ironmasters' Association to be held on Tuesday next in Middlesbrough. It is not definitely known how many furnaces may be blown out, but there is every probability that a dozen at least will be extinguished; and the effect of this reduction would undoubtedly be to aid the iron makers in maintaining the attitude they have assumed with respect to the regulation of prices. At their meeting, on Tuesday, the ironmasters of Cleveland decided to remain firm to the rates they have quoted for the past three weeks; and as no abatement could be obtained from this source, consumers sought out merchants who had stocks of iron to dispose of, and endeavoured to place orders at something less than producers' terms, which were based on 4½s. for No. 3. But merchants have only a small quantity of iron in hand, the great bulk of the accumulated stocks being in the hands of makers, who have now close on 250,000 tons stocked at works; and if the producers' league remains firm to itself, merchants will soon be prevented by the total absence of resources from underselling them on any terms. The foreign export trade remains very dull. Less iron is being sent to Germany and France than at this time last year; and, indeed, the present political crisis in the latter country seems to have entirely paralysed the energies and confidence of traders. Scotland continues to take from Cleveland a larger proportion of iron than formerly, and it is anticipated that the iron business between the two countries will be increased when the new docks, now being constructed at Grangemouth, have been completed.

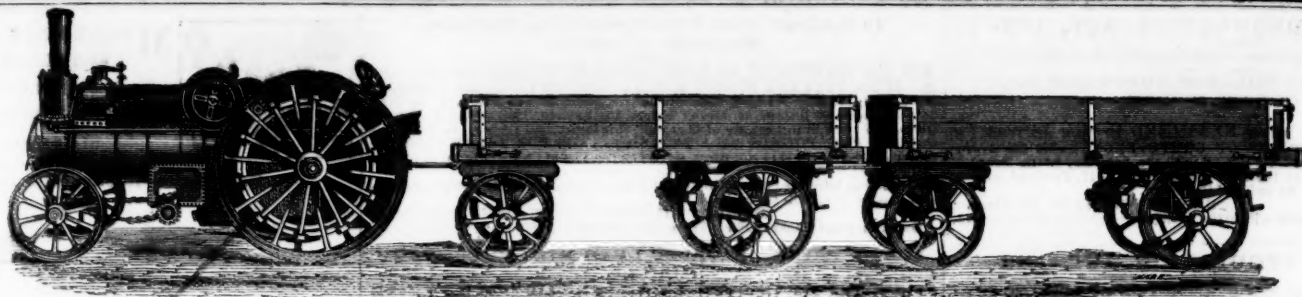
The Finished Iron Trade has this week received another blow by the stoppage of the rail-mill of Hopkins, Gilkes, and Co., which has for some time past been the only mill of its kind working on Teesside. This stoppage, which will affect some 150 men, is, however, only temporary, being due to the unpreparedness of some foreign customers to receive deliveries. Mr. J. R. Wimpenny is now appointed secretary to the Iron Manufacturers' Association, which includes all the firms connected with the Board of Arbitration. The latter board held a meeting this week at Darlington, when the employers mooted the question of a further reduction of ironworkers' wages. The employers would like the men to make some concession in the present fearfully depressed state of trade, but, failing this, they will be sure to move for an alteration of the existing wages agreement after Christmas. The ironworkers in Cleveland are now nominally paid at the puddling rate of 8s. 3d. per ton, but very few are able to secure full work, and probably a full third, if not more, are doing next to nothing.

Every other aspect of the coal trade of the North pales in interest before the threatened lock-out of miners in Northumberland. The miners of that county agreed by a great majority that the demand of the owners for a 12½ per cent. reduction should be referred to arbitration, and negotiations were at once opened with the owners for the purpose of having arbitration applied. But the latter, at a meeting held on Wednesday, emphatically declared that they could not think of submitting to the expense, delay, and inconvenience of arbitration; and hence unless the men submit to the reduction they will be locked out on Monday next. The owners are, no doubt, in a great difficulty, and their position is justified by the fact that Wales, which is the chief competing district, is, by lower wages and other advantages, leaving them a long way behind in the race.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Dec. 13.—No material change has taken place in any of the leading industries of Derbyshire, and business goes along in a quiet and routine manner, better things being looked forward to. Lead mining has undergone little change, the quantity of ore raised being very moderate. Some of the collieries have been working pretty well, but at others four days a week has been the extent. House coal goes off very well from Clay Cross and other leading places to the London market, where the competition between the inland and the seaborne coal is still pretty keen, the latter having a considerable advantage in the shape of a low carriage rate. The business doing in steam coal has fallen off, the consumption at home, as well as our exports, as is usual at this time of the year, not being so large as during the summer months. In other descriptions of coal the trade is without quotable alteration. Makers of pig-iron still complain of the moderate demand and the low prices which prevail. The foundries appear to be going on moderately well, whilst the Bessemer establishment is as active as ever in the rolling of rails.

Rather more activity is discernable in several branches of the Sheffield steel trade, which will be agreeably felt by many workmen who have long been on short time. A slight improvement has taken place in crucible steel of different qualities, more particularly for fine cutlery. America has been sending some fair orders for table pen, and pocket knives, whilst more in some of these articles is being done with the Continent. Home travellers also report a little more business, but, as usual, customers at this time of the year merely give small orders to keep up stocks, or for a description of goods suitable for Christmas. Thus it is that the makers of plated ware



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PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



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SILVER MEDAL, 1867.

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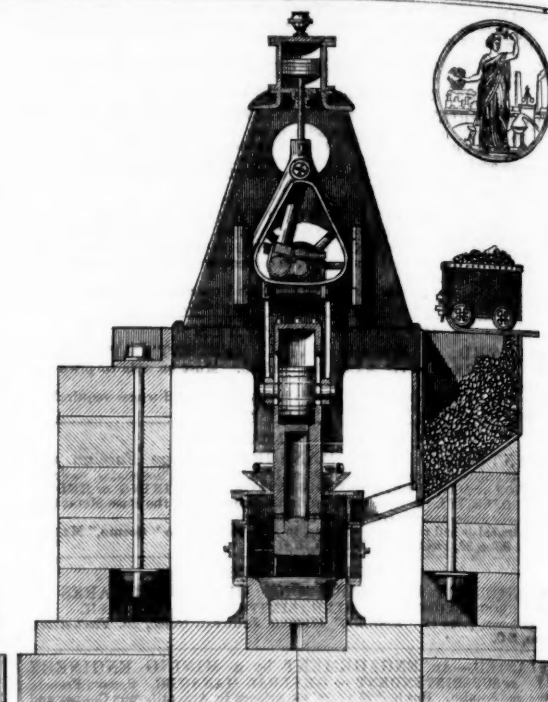
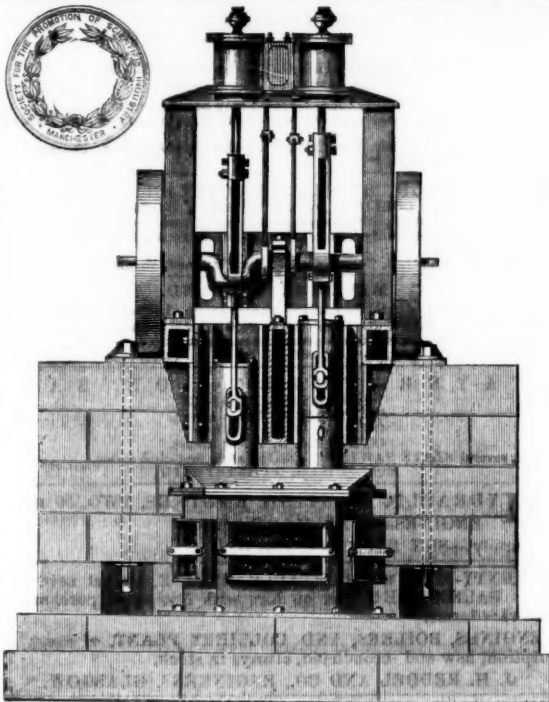
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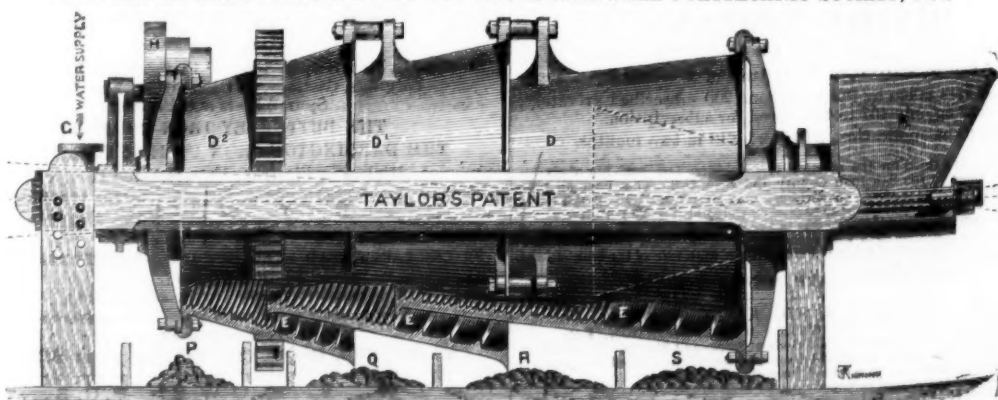
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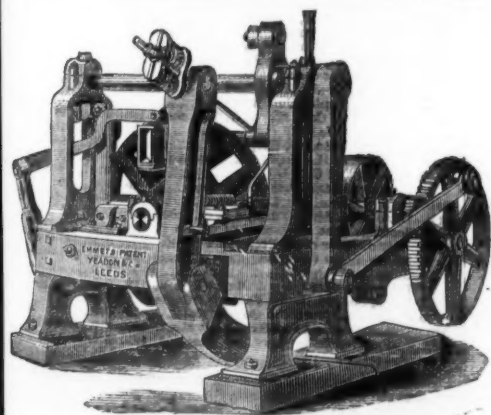
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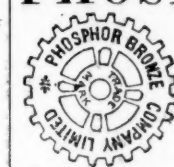
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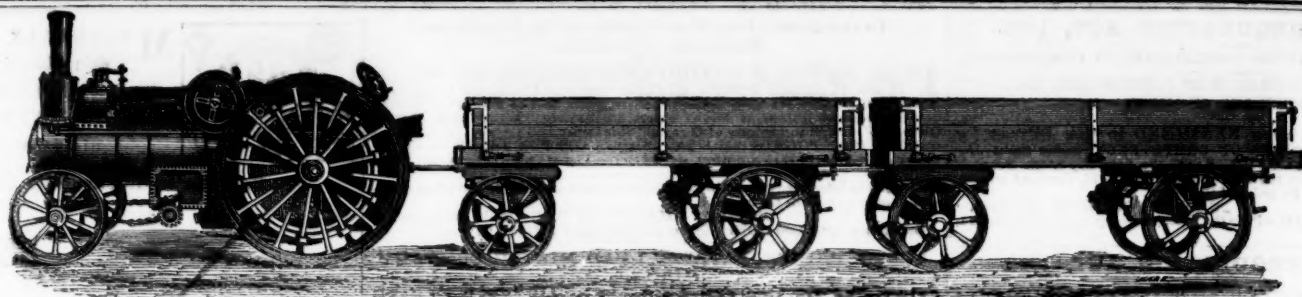
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A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the St. Gothard Tunnel.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

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In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere ($7\frac{1}{2}$ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL; and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

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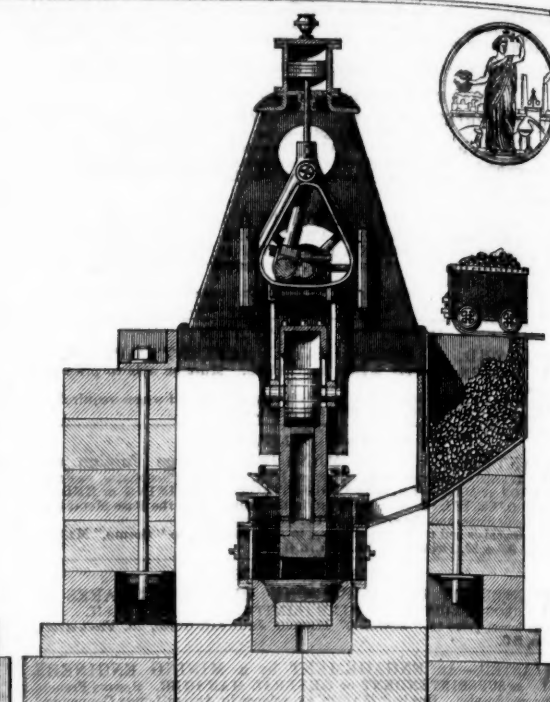
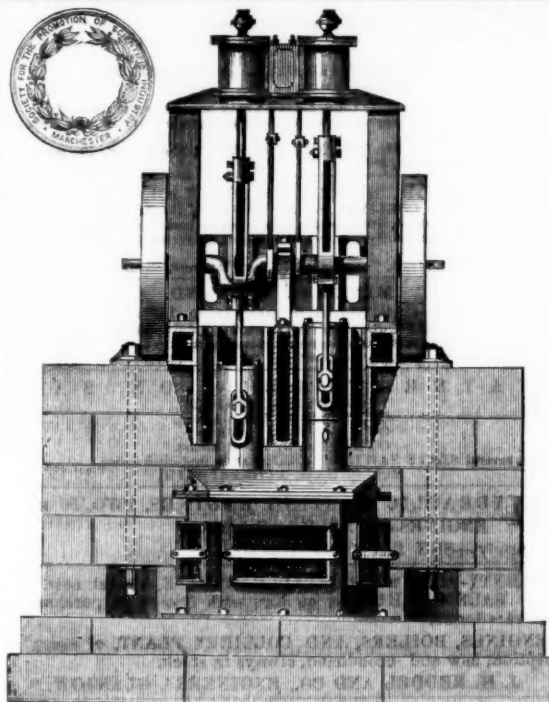
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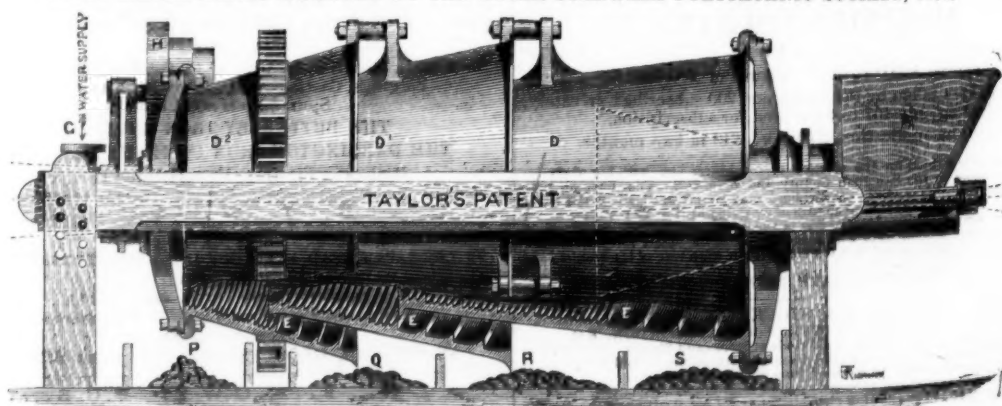
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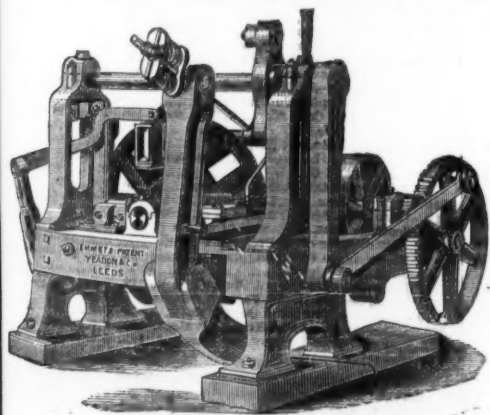
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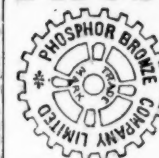


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